57168/A

9.　£95-

Digitized by the Internet Archive
in 2017 with funding from
Wellcome Library

https://archive.org/details/b28751280

Geneve.
1824.

Freeman. Sculp.^t

SIR ASTLEY COOPER, BAR.^T

Surgeon to the King, &c.

London Published May 1.1828. by E. Cox & Son S.^t Thomas's S.^t Southwark.

A

MANUAL OF SURGERY,

FOUNDED UPON THE

PRINCIPLES AND PRACTICE

LATELY TAUGHT

BY

SIR ASTLEY COOPER, BART. F.R.S.

SERGEANT-SURGEON TO THE KING,
CONSULTING SURGEON TO GUY'S HOSPITAL;

AND

JOSEPH HENRY GREEN, ESQ. F.R.S.

PROFESSOR OF ANATOMY TO THE ROYAL ACADEMY,
SURGEON TO, AND LECTURER ON SURGERY,
ST. THOMAS'S HOSPITAL.

THE SECOND EDITION.

EDITED BY

THOMAS CASTLE, F.L.S.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, &c.

LONDON:

PRINTED FOR E. COX, ST. THOMAS'S STREET,
SOUTHWARK.

1829.

Printed by J. J. Metcalfe,
3, Grocers' Hall Court, Poultry.

EDITOR'S PREFACE.

A very prominent object in the publication of all works, should be, to convey as much useful matter in as concise and convenient a volume as the peculiar nature of the subject will allow.

Almost every department of the study of medicine has been presented to the student, both in the elaborate and more restricted form ; the first with a view of furnishing every known circumstance connected with the science ; and the second to be the more immediate guide and companion to his studies.

In acquiring a knowledge of the theory and practice of surgery, extensive reading is not only beneficial, but absolutely necessary, before we can practise with success, or understand the true intention and application of our remedies; yet for the mere beginner to commence his studies by plodding through volume after volume, forgetting as he must, in the multiplicity of description, the very facts he is anxious to acquire, is not only overloading the understanding ere it can form a judgement for itself, but it is a sad loss of time, and a great source of perplexity and confusion. While the mind is young in knowledge, let us remember its powers of comprehension are but weak; and since the study of the medical profession generally, includes such a variety of subjects alike extensive and alike wrapt in the mysteries of doubt, rather should we first be taught the ruling principles, and then, when we have derived a perfect knowledge of the outlines, we may safely venture to drink deeper of the science, and be better prepared to meet the baffling sentiments so universally presented in all medical and surgical works.

Although we have advanced thus much upon the part of reading, it is well known that neither the principles nor practice of surgery can be sufficiently impressed upon the mind by that alone; there must be something far more illustrative to make a scientific and skilful surgeon; he must not only read, but he must compare at the bedside of the patient, that which he reads, with the peculiar character of attending circumstances. This, and this alone, will make him an accurate observer of nature; he will then be able to judge the value of existing opinions, and not until then can he enter on the stage of his professional life, prepared to perform the various duties of his station.

Students in the country have not generally the means or opportunity of pursuing such a course with much benefit or advantage, but when they arrive at the metropolitan schools, every facility is offered, and it only rests with themselves to make a necessary proficiency.

The grand source and support of all surgical knowledge, must ever devolve on the noble institutions which humanity has erected in this and other cities of distinction; for without these, the collateral rays which emanate from private practice, would never have raised the dignity of surgery to the rank it now holds in the opinion of the world. Here we have at one and the same time, an assemblage of the diseases and accidents which mortality is heir to, and, attached to every institution, a school of instruction for the young and inexperienced, where they may learn to avoid the superstition and empiricism of our ancestors, and be taught to exercise their profession with honor to themselves, and with benefit to the public.

Although the usual means of cultivating sound surgical knowledge are generally given by these institutions, yet there remains, in my humble opinion, one point in which their utility might be more constantly secured to the pupil. The mere walking from one ward to another, and taking a cursory view of every patient, is not a proper plan to be pursued; they should take with them a pocket companion, and when they meet with any particular case, they should first make their own observations, and then immediately refer to know what they have overlooked, or what is unusual to its general character. In this way, they would readily acquire accuracy of observation, and soon become tolerable masters of each subject.

Notwithstanding the surgical press teems with works of every description, I do not know that there is one which will answer the double indication of furnishing the pupil with a general outline of the science, and, at the same time, is sufficiently portable to admit of no personal incumbrance as a companion to the wards. It is under such an impression that I am endeavouring, in the publication of this little volume, to supply that deficiency, and as the opinions herein contained, were for many years delivered at a public hospital,* and have been occasionally published† to the world, the reader must not expect any thing novel, save the manner of re-communication. The lectures from which I have made my extracts, I was led to select, because they are the result of extensive practice, and the instructions of observing surgeons; the one highly courted for his skill and universal reputation, the other equally admired for his general knowledge and professional acquirements.

The only ground on which I was induced to become Editor of the present Manual of Surgery, was the full assurance of the utility and necessity of such a work; and as the learned lecturers have individually and connectedly, given me an honorable permission to re-publish their surgical sentiments, I cannot be considered trespassing on literary property, or in the least guilty of piracy. If a free grant had not been conferred on the part of the respected gentlemen in question, I would not, on any account, have undertaken the work; but as they have in this, as in every other professional capacity, proved themselves disinterested well wishers of surgery, I have availed myself of their generosity, and seek no other remuneration than their approbation, and benefiting the student. It is for surgical pupils I have especially constructed the volume, and to give it the highest authority for their reliance, I have introduced nothing but what will be found in the lectures themselves, unless otherwise specified as from myself.

---

* St. Thomas's Hospital, Borough.

† Lancet, &c.

Throughout the whole treatise, I have aimed at brevity and clearness of communication, and, wherever it was possible, I have inserted the usual expressions of each lecturer; but thinking that short sentences are best adapted for convenient reference, I have treated each subject in the form of paragraphs with appropriate or occasional notes, and so arranged the peculiarity of type in printing, as to give the whole a marked and impressive appearance; not, however, but that one part is as much entitled to minute attention as another.

My sole object in the execution of my task, has been directed towards the convenience and advantage of the student, but if he unhappily consider his inquiries have gone sufficiently far, when he understands the contents of the volume in hand, he labours under a very serious and dangerous error; the work is only presented to him to refresh or direct his memory, and not to complete the grand structure of his surgical understanding: surgery is a science too extensive to be condensed in so small a compass; it is only possible to give leading points, and he must naturally look to other sources, before he can conscientiously enter into practice.

Although I am desirous in the present undertaking, of alleviating the steps to a general knowledge of surgery, let it not be imagined, for one moment, that I am wishing to save the necessary toil and perseverance of greater devotion to the subject, and thereby encouraging idleness in the rising profession; for, on the contrary, I have pointed out the value of extensive reading, and would have this effort of assistance, considered only as intended for their convenience, and as an additional means of insuring them practical information. It is their duty to recollect that they are hereafter to hold responsible situations in life, and if they neglect to embrace every opportunity of instruction, they will probably be called upon to equalize the consequences, by a painful reflection of their incompetency to meet the claims upon their public character. I would therefore recommend them (though young to advise, I acknowledge,) earnestly to give their sole time and attention to the true design of their Hospital Education, to search indefatigably after science, and however difficult or unbounded the prospect may appear before them, they have only to pursue one even path with patient industry, and they will never fail to secure an honorable passport to the ultimate advantages of their professional studies.

Finally, in offering to their attention a second edition of the work, I regret other engagements have not afforded me time to make the additions and improvements I had meditated; but as the original impression has been very favourably received, I trust, even a reprint, will continue to support its character as a convenient and desirable volume.

THOMAS CASTLE.

May 7th, 1829,
38, *Bermondsey Square.*

TO

SIR ASTLEY COOPER, BART. F. R. S.

SERGEANT-SURGEON TO THE KING,
CONSULTING SURGEON TO GUY'S HOSPITAL;

AND

JOSEPH HENRY GREEN, ESQ. F. R. S.

PROFESSOR OF ANATOMY TO THE ROYAL ACADEMY; SURGEON TO,
AND LECTURER ON SURGERY, ST. THOMAS'S HOSPITAL;

THIS LITTLE VOLUME OF SURGICAL NOTES,

SELECTED FROM THEIR LECTURES,

FOR THE USE OF STUDENTS,

IS, BY PERMISSION,

MOST RESPECTFULLY INSCRIBED,

AS A TRIVIAL ACKNOWLEDGEMENT OF THE VALUE OF
THEIR INSTRUCTIONS; WITH THE EARNEST HOPE
THAT IT WILL PROVE A CONVENIENT AND
USEFUL COMPANION TO THE WARDS;
AND ALSO, BE A FURTHER MEANS
OF AFFORDING PRACTICAL
INFORMATION;

BY THEIR VERY GRATEFULLY OBLIGED PUPIL,

AND DEVOTED HUMBLE SERVANT,

THOMAS CASTLE.

MANUAL OF SURGERY.

PART I.

CONSISTING OF PRACTICAL NOTES SELECTED FROM
A SERIES OF LECTURES DELIVERED

BY

SIR ASTLEY COOPER, BART. F.R.S.

SERGEANT-SURGEON TO THE KING,
CONSULTING SURGEON TO GUY'S HOSPITAL,
&c. &c.

MANUAL OF SURGERY.

INTRODUCTION.

1. Surgery is that part of medicine which requires us to perform operations for the removal of diseased parts; and to know how to regulate the system by the use of medicine, when local diseases are produced by constitutional derangement.

2. Surgery is usually divided into the principles and practice.

3. The principles of surgery are learned from observations on the living, when diseased, by dissection of the dead; and by experiments upon living animals.

Our deductions from these sources, furnish us with the means of knowing a malady by its symptoms, the alteration of structure in a part when diseased, and the various ways which nature attempts the reparative process, both in external and internal parts.

4. In the practice of surgery, many essential qualities are requisite on the part of the surgeon; as neatness of applying his remedies, gentleness of manners, and self-possession.

5. A thorough knowledge of anatomy is absolutely necessary; it teaches us how to discriminate disease, and to detect the nature of injuries with greater perspicuity.

The parts of the body most essential to be particularly studied, are the brain, bones, arteries, veins, nerves, and joints. Of each of these you should make yourselves well acquainted, with their form, situation, and function.

6. Physiological knowledge is of the utmost importance to the profession of surgery; this gives you a clear idea of the healthy functions, and thus enables you better to understand the nature of diseased action.

7. The study of medicine is important to the surgeon; he should be able to prescribe with certainty; should well understand the great influence of local disease on the constitution, as well as the origin of local disease from constitutional derangement.

8. Reading and application to your studies will also prove considerable auxiliaries to render you well informed and skilful surgeons; for without laying a good foundation, you cannot have a substantial superstructure.

9. The expenses of your professional education, and the expectation of the public, call upon you to search for true knowledge, that you may thereby fulfil your duty towards them, shed honor on the medical profession, and finally, after the necessary toils of life, retire into the bosom of your family honored and respected.

IRRITATION.

1. Irritation is an altered action, excited in the system, by an unnatural impression.

2. All the actions of the body are excited and sustained by internal and external impressions, which are called stimulants.

3. These stimulants may be either natural to the human frame; as blood, to the blood vessels; bile, to the intestines; and so on; or they may be foreign; as balls and splinters, &c.

4. Between all the different parts of the body, there exists intimate relations, which correspond with each other, and carry on a reciprocal intercourse of actions.

5. The beautiful harmony produced by these concurrent phenomena, is called sympathy.

Thus impressions not only produce effects on the part to which they are directly applied, but in consequence of the freedom of communication between the nervous system, parts of the body at a distance from those in which the original mischief exists, become affected by it.

6. Sympathy may exist either naturally, as the communication which there is between the uterus and breast; or it may be the result of injury and disease.

7. Its effects are communicated from one part to another, through the medium of the nervous system.

8. The modes of sympathetic communication are various.

In some instances the course of irritation is from the irritated part to the sentient extremity of the nerve, as the pain experienced in the knee and foot from a disease in the hip. In other cases, the course of sympathy is from the affected part to the origin of the nerve, as in pain in the loins consequent on diseased testicles. Irritation on the nerves of the grand sympathetic, is communicated to the stomach, probably through the medium of the semilunar ganglion.

9. Irritation is either local or general: *local*, for instance, when a decayed tooth produces an abscess; *constitutional*, as in compound fractures.

10. Constitutional irritation is characterized by pains in the loins, up the spinal chord, and of the head; restlessness; an anxious countenance; tongue dry, white, afterwards yellow, then brown; loss of appetite; diminished secretions; white stools; hard, quick, and irregular pulse; which symptoms, if the irritation continues, are followed by a hurried respiration; impaired intellects; hiccoughs, vomiting, low muttering delirium, and finally, death.

11. From these symptoms we may perceive, that immediately upon the receipt of an injury, nature commences the restorative process, by stopping all the customary secretions; the various outlets being thus closed, the blood collects in large quantities in the heart and great blood-vessels, which propel the blood with increased force to the wounded part, and this gives rise to some form of inflammation.

12. The degree of constitutional irritation, resulting from injury, depends on several causes; these are, the importance of the parts injured; the extent and nature of the injury; the state of constitution, age, and previous habits of the patient.

Irritation is greatest in children, and least in aged persons; the former are very much affected by operations, whilst the latter are very slightly so.

13. The treatment of irritation is much the same as that required in inflammation.

14. When constitutional irritation arises from a local cause, the remedies must be chiefly directed to the removal of that cause, or to lessen its effects upon the constitution; but, on the contrary, when local disease is either promoted or aggravated by constitutional derangement, then your remedy must be directed to the disorder of the system; and as that improves, so will the local affections disappear.

15. Constitutional irritation must not be too suddenly subdued nor destroyed, as a certain degree of irritation shows that nature is endeavouring to accomplish the restorative process: keep it within bounds, carefully watch its progress, and if necessary, check its violence, but do not entirely destroy it.

16. There are two means of reducing irritation: the *first*, by restoring to the different organs their various secretions, by which the outlets become opened, and fever lessened; and the *second*, by allaying the excitement of the nervous system.

The first indication may be fulfilled by producing a termination to the skin, and the administration of aperients, but when the irritation is very severe indeed, you should give mercurials to act on the liver, saline medicines on the intestines and kidneys, and antimonials on the skin. The second indication is answered by giving opium and antimony combined, or calomel, antimony, and opium, to act on the skin and liver as well as the nervous system.

17. In cases of irritation, bleeding must be resorted to with care, for if it be carried to a great extent, the powers of the constitution will be unequal to the reparation of the injury.

18. Chronic irritation is best treated by giving small doses of the oxy-muriate of mercury, with rhubarb, bark, or sarsaparilla.

INFLAMMATION.

1. Inflammation is the means by which local injuries are repaired, and it may therefore be considered as the restorative principle.

2. There are four signs that commonly attend it; viz. redness, pain, increased heat, and swelling.

3. Redness arises from an increase of the red particles of blood in the part.

4. Pain, or increased sensibility, is owing to distention of the nerves by the greater quantity of blood determined to them.

Parts naturally little sensible, are quite the reverse when in a state of inflammation. Bones, though nearly destitute of sensation in their healthy state, are sometimes extremely sensitive when inflamed.

5. Increased heat is not yet generally allowed to exist.

Though no increase of heat is manifested in internal inflammation, yet when it occurs on the surface of the body, an alteration sometimes, of several degrees, takes place.

6. Swelling is owing in part to an increased determination of blood to the part, and also depends on effusion of the fibrin of the blood, which, in coagulating, deposits serum in the surrounding cellular tissue.

7. In inflammation, the vessels of the part are in a dilated state, and the surrounding ones have an increased action.

8. The *local* effects of inflammation, are either adhesion, suppuration, absorption, or gangrene; the *constitutional* ones are similar to those of irritation.

9. Inflammation produces different results in different parts.

10. When seated in the skin, it usually becomes extensive, because the surface is unbroken.

Its colour is very florid; it separates the cuticle in the form of vesications, which usually contain serum, but also in some cases, fibrin; a serous effusion is also produced by it into the subjacent cellular tissue; in some instances it is preceded by fever, in others followed by it.

11. In the cellular membrane, inflammation produces an effusion which obliterates or fills its cells; if it proceed, it occasions suppuration, and produces an abscess.

12. In debilitated irritable constitutions, inflammation destroys the cellular tissue, and produces carbuncle.

When inflammation is of a chronic nature, it occasions tumours of various kinds, as the steatomatous or adipose; or under peculiar circumstances, those of a malignant nature, as the scirrhous, fungous, &c.

13. Inflammation of fasciæ is generally extensive, from the large surface they present.

When matter is produced by inflammation of this texture, and is seated under it, great irritative fever succeeds until it is discharged.

14. When inflammation attacks muscles, it is known by the spasmodic twitchings which attend it.

15. Tendons are not very susceptible of inflammation, but they sometimes become inflamed to a considerable extent.

Punctured wounds of tendons are apt to produce tetanus more than wounds of other parts of the body. Matter formed under tendons, burrows to a great extent, and produces violent irritation.

16. Inflammation in the absorbent vessels, is marked by red lines on the skin, in the course of these vessels.

These form hard knots, from the skin participating in the inflammation. Their glands become also inflamed, and both glands and vessels occasionally suppurate. Absorbents more frequently inflame from common irritation than from the absorption of poison.

17. Arteries are rarely inflamed, excepting after wounds, on the application of ligatures.

18. Veins which are inflamed from wounds, become like hard and broad cords, and extremely tender to the touch.

19. Nerves are very rarely inflamed, but when they are, the pain is excessive, and there is a tingling sensation in the parts to which the nerve is distributed.

Wounds of nerves, though extremely painful at the moment, are followed by little irritation.

20. Ligaments, like tendons, are not very prone to inflammation in healthy constitutions, but the synovial membrane which lines them, is highly so ; and the inflammation has a tendency to go on to the suppurative process.

In scrofulous persons, the synovial surface becomes inflamed, and the ligament covering it, thickened, so as to produce great enlargement of the joints.

21. Cartilage in joints, ulcerates from inflammation, and often becomes entirely destroyed.

22. The bones, like other parts of the body, are subject to inflammation ; and when fractured, it is by this process that their union is effected.

23. Serous membranes, when inflamed, are remarkably disposed to pass into the adhesive inflammation ; whilst mucous membranes, on the contrary, generally go into the suppurative state.

24. Inflammation may be either *acute* or *chronic.*

25. Acute inflammation usually goes through its various stages with great rapidity.

The adhesive stage is marked by hardness and pain ; the suppurative, by irritative fever, fluctuation, and throbbing or pulsation ; ulceration usually succeeds in a short space of time, and the matter is discharged.

26. Chronic inflammation is exceedingly slow in its

progress, and is either the result of acute inflammation, or owing to a peculiar state of constitution, occurring in persons who have lived intemperately, or who have been depressed with laborious exertions and disappointments.

27. Inflammation may also be either *common* or *specific.*

28. Common or healthy inflammation is the kind we look to for the reparation of an injured part.

Shortly after an injury, if inflammation of this character is set up, adhesive matter is thrown out upon the edges of the wound, by which they become perfectly united.

29. Specific or unhealthy inflammation; in this inflammation, the vessels have an entirely different action to what happens in the healthy, and thus the fluids and solids have a decidedly opposite character.

There are two descriptions of specific inflammation: the first is produced by a peculiar condition of the constitution, as in the formation of scirrhus, scrofula, gout, &c. and the second, by the application of a poison, as in syphilis, &c.

30. In addition to the kinds of inflammation already mentioned, there is another, which I propose to call the *irritable.*

31. In this kind, the nerves are more affected than the blood-vessels; consequently the parts labouring under its influence, are exceedingly tender to the touch.

The eyes; the breasts of young women; the bladder; and the testicles; are very disposed to this species of inflammation.

32. The true proximate causes of inflammation, appear to be an increase of action in the vessels of the part, and an increase in the size of the vessels themselves.

33. The exciting causes of inflammation are whatever produces an unnatural state of the parts, calling upon nature for its reparation, which she effects by the process of inflammation, as bruises, pressure, extraneous substances, &c.

34. Inflammation sometimes arises from debility, as is frequently seen in the extremities of old persons.

In these cases, bleeding must be resorted to with caution.

35. Irritable persons are much more pre-disposed to inflammation than others, and when it occurs in them, it is of a more dangerous nature than in those who are not irritable.

36. *Treatment:*—This is either constitutional, local, or both combined.

37. *Constitutional:*—When any important organ is injured, or its functions disturbed in consequence of the influence of the injury on the constitution, the treatment must be invariably constitutional.

In persons of irritable habit, constitutional treatment is necessary, whether any important part is injured or not.

38. The most powerful means of relieving inflammation, is by the abstraction of blood. Its beneficial effects principally result from producing a diminution of nervous power, or syncope; secondly, by lessening the quantity of blood; and lastly, by facilitating the re-establishment of the secreting functions.

A hard, wiry, and quick pulse indicates blood-letting; but quickness of pulse is not in itself a sufficient proof that bleeding is requisite; but when united with hardness, no additional evidence of its necessity can be wanted. The pulse, however, is not always hard when inflammation attacks important parts, for when the stomach or intestines are thus affected, the pulse is scarcely perceptible.

39. The indication for a repetition of blood-letting, is said to be a buffy state of the blood; but your decision must not be governed by this appearance, you must still have a hard pulse.

When blood is cupped, it is said to be a proof of strength, and that bleeding should be repeated; but from an experiment related by the Baronet, it was shewn that even a cupped state of the blood, and buffiness conjoined, are not sufficient evidence to warrant the repetition of blood-letting.

40. The quantity of blood which should be drawn, must depend entirely on the severity of the complaint.

41. As the grand object of bleeding in inflammation, is to produce syncope, the blood should be abstracted rapidly, by means of a large orifice.

42. When you have accidents brought to you, which will require a long time for their recovery, you must be exceedingly careful how you take away blood from the general system, but must adopt, in these cases, local depletion.

There are some cases of inflammation, where bleeding will not afford relief; this more frequently happens in inflammation of the testicle than in any other parts; for these affections you must administer the Compound Powder of Ipecacuanha, combined with Calomel.

43. The second mode of relieving inflammation, is by restoring the secretions.

The most important secretions, are those of the liver, intestines, skin, and kidneys; and when these cease to perform their proper functions, irritative fever is the consequence.

44. As it is necessary in inflammation, not only to act upon the intestines, but also to stimulate the liver, the best plan is to give calomel at night, and a saline aperient in the morning.

Castor oil, rhubarb, scammony, and antimony, may be ordered as aperients; and in addition to these means, the use of injections, and the warm bath, are the best means of restoring the secretions of the digestive organs.

45. The secretion from the skin, may be produced by giving antimonials with calomel; and that of the kidneys, by the administration of diluents, squills or acetate of potash.

Extensive inflammation will not be overcome by restoring this or that secretion, for it cannot be effected but by the complete restoration of them all.

46. Provoking a constant nausea in the stomach, is another mode of subduing inflammation.

From what has been said on the treatment of inflammation, it appears that, by venæsection, we diminish the quantity of circulating fluid, and assisted by the restoration of the secretions, we prevent the heart from propelling a quantity of blood with violence to any particular part of the body.

47. The remedies employed in chronic inflammation, must have a slow and gradual action on the secretions, you cannot take this disease by storm.

Calomel and Opium; Compound Pills of Sub-muriate of Mercury; Oxy-muriate of Mercury, with the decoction of Sarsaparilla; and in children, Rhubarb, with the Hydrargyrum cum Creta.

48. *Local:*—Cold applications will relieve, by abstracting heat; by lessening the size of the vessels; and by diminishing the action of the part, through lessening its nervous irritability.

A lotion of Sp. Vini Rect. ℥j. with Aquæ ℥v. is the best local remedy. Ice is not recommended in the inflammatory stage, it irritates and sometimes produces gangrene. In applying spirits of wine, let your cloth be very thin, that evaporation may freely take place.

49. In contra-use to cold applications, heat and moisture is a valuable remedy; for the two produce relaxation, open the pores, give rise to perspiration, thereby removing congestion.

Fomentations or poultices is the general form of applying it. Leeches are used with the same view as poultices or fomentations; and also in some cases, puncturing the parts with a lancet.

50. As in the *Acute*, our object is to diminish vascular action; so in the *Chronic*, we endeavour to increase it, by the use of stimulants.

Thus in long continued discharges arising from relaxation, we employ stimulating lotions, for the purpose of restoring to the vessels their healthy power of contraction. Again, in sluggish indolent ulcers, it is absolutely necessary to excite action.

51. *Counter-irritation:*—Is a very powerful remedy in inflammation, and its advantages numerous; but the chief benefit that results from its employment, arises from its drawing off the blood from the neighbouring inflamed parts, whereby it checks the course of disease in important organs.

Thus a blister at the nape of the neck, if early applied, will arrest an inflammation of the brain, and so on in other parts of the body. Blisters, issues, setons, and ointment of tartarized antimony, are the usual counter-irritants.

52. Counter-irritation, if carried to too great an extent, will aggravate the original disease.

53. Position and rest must be particularly attended to, in the treatment of inflammation.

54. Indurations frequently remain after inflammation has entirely ceased: these are to be got rid of by diminishing the circulation of the part, and producing absorption.

Pressure with rollers or strapping, electricity, mercury, and friction, are the usual means resorted to.

ADHESIVE INFLAMMATION.

1. Adhesive inflammation is the process by which divided parts become united. Inflammation being set up, the fibrin of the blood is effused into the cellular membrane, or on the surface of the wound, by which means they become glued together, and permanently unite.

Serous membranes, as the peritoneum, cellular membrane, pleura, pericardium, and the membranes of the brain, are especially disposed to the adhesive inflammation.

2. Adhesive matter, when effused on a thin membrane, coagulates into a net work, assuming the character of cellular membrane.

3. When adhesive matter has been formed, blood-vessels soon enter it, and within a short time it becomes organized; the vasa vasorum are elongated by the force of the circulation; they enter the newly-formed substance, and send throughout it minute ramifications.

In cutting into adhesive matter, within twenty-four hours after it has been deposited, small bloody spots may be seen, which mark the future situation of the vessels which nourish it; but it is not till ten days after it has been formed, that adhesive matter becomes completely organized; for you will find that a fine injection would not enter adhesive matter, sooner than the tenth or eleventh day after its formation. When vessels elongate, they have not the character of arteries; in general, they take a serpentine course.

4. The vessels do not originate in the newly-formed substance; but they are formed by the elongation of the vasa vasorum of the surrounding arteries, which become dilated, lengthened, and serpentine; and the degree of vascularity will be in proportion to that of the part subjected to the adhesive inflammation.

5. Unless adhesive inflammation takes place, not the slightest wound or scratch would heal, it is therefore one of the first points in surgery, to endeavour to obtain a healthy adhesive inflammation.

6. The adhesive process is useful in the formation of cysts, in healing wounds, sealing blood-vessels, enclosing pus, and by its dividing cavities into distinct parts, thus fixing a boundary to the suppurative process.

7. The effusion of adhesive matter, by unloading the vessels of the part, has the effect of reducing inflammation, so that the process generally terminates as soon as this effect is produced.

SUPPURATION.

1. Suppuration is one of the terminations of inflammation: it consists in the formation of purulent matter from the secreting orifices of the blood-vessels, which matter is named pus.

Pus is formed in cavities, produced in the body by a process of absorption, as in abscesses; it is found also as a secreting fluid, on the surfaces of membranes, or upon granulating surfaces.

2. The formation of matter is often attended with severe constitutional irritation; there are rigors succeeded by heat, and if the inflammation be extensive, or seated in any vital organ, the constitutional disturbance will be very severe, and the shivering, which indicates the formation, will also be severe, and followed by a powerful re-action.

When pus is easily produced, as upon mucous membranes, there is no rigor whatever.

3. When there is an attempt to produce matter, there is an unusual sensation of uneasiness in the part, together with a blush on the skin. As this continues, the tumour becomes soft in the middle, but remains hard at the sides; the centre rises, and upon pressure, fluctuation will be evident.

In the adhesive inflammation, the pain is an acute thrilling one; but here it is more dull, and is, likewise, pulsatory or throbbing.

4. The next thing to be observed, after the pointing of the tumour, is an effusion of serum beneath the cuticle, which separating it from the cutis, it becomes gradually distended, and then bursts, leaving the cutis exposed.

Ulceration sometimes takes place on the surface of the skin, whilst the same process is going on internally, so as to facilitate the discharge of the matter; generally speaking, however, the ulcerative process is continued entirely from within.

5. Pus is generally formed, in from seven to fourteen days; but the time required for this process, will very much depend on the constitution of the patient, and the structure of the part in which the inflammation is seated.

6. Some parts more readily run into the adhesive, others into the suppurative inflammation: the pleura, pericardium, peritoneum, &c. are subject to the former; while the urethra, vagina, lachrymal duct, trachea, bronchia, &c. are liable to the latter: serous surfaces, therefore, are affected by the adhesive inflammation, and mucous surfaces by the suppurative.

The vessels of serous membranes are too small to permit the transmission of the particles which pus contains; but when the inflammation becomes excessive or long-continued, then the vessels dilate, and purulent matter is formed, even on serous surfaces.

7. Pus is not a fluid produced by the dissolution of the solids; it is secreted by the blood-vessels, but not until they have been acted upon by inflammation.

Pus is composed of particles, nearly similar to those of the blood, only differing in colour, swimming in a fluid resembling serum, and coagulating as serum does, when exposed to the influence of heat.

8. Pus, when healthy, is a bland fluid, and will not

irritate the parts that produce it; but when it is unhealthy, having mixed with it too large a portion of serum, or when bloody, then it will irritate and occasion excoriation.

Healthy pus appears to be composed of the constituent parts of the blood, slightly changed in their character, by inflammation.

9. When pus of a poisonous kind, (the result of specific inflammation,) is applied to the surface of the body, it irritates, occasions inflammation and suppuration, and the newly-formed matter is exactly of the same virulence and poisonous nature, as that which produced it.

The discharge of gonorrhœa, chancre, vaccine, and variolous matters, are well-known examples.

10. Suppuration answers two very beneficial ends: the first, by forming a convenient covering to granulating surfaces; and the second, by effecting the escape of extraneous bodies.

11. Some wounds are very troublesome,—do what we will, we cannot get them to heal.

In these cases, it is advisable to discontinue your dressings, and let their surfaces remain exposed to the air, incrustations or scabs will form: under these, pus will be secreted, which, by keeping the granulations constantly moist, will often cause ulcers of this kind to heal, when all artificial attempts have been completely unsuccessful.

12. Long-accustomed discharges require great caution when healing them; for, if done too suddenly, hectic or apoplectic symptoms are very apt to supervene.

Quantities of matter, constantly discharging for a considerable period, inevitably act on the constitution as sources of depletion; and which, if suddenly discontinued, will naturally produce the symptoms just mentioned.

13. Ancient surgeons instituted issues as a counteraction; but purgative medicines will answer much better, and speedily carry from the system, by a natural channel, any increase of its fluids.

14. Suppuration is best promoted by the application of heat and moisture combined.

ULCERATION OR ABSORPTION.

1. Ulceration is the absorption of any part of the body, and the result of previous inflammation.

2. Ulceration arises from an increased action of the absorbents, produced by pressure united with inflammation.

These vessels are thrown into a state of inordinate action, whenever any considerable quantity of blood is thrown upon them; whereby the natural balance between the arteries and the absorbents, is destroyed.

3. Ulceration often occurs without being accompanied by any purulent secretion.

Aneurism is very good proof that pressure is the cause of ulceration, and that ulceration is not necessarily accompanied with the formation of matter.

4. Formation of matter only happens on exposed surfaces of the body, where it is necessary for the protection of sores, by covering the granulations.

5. The constitutional symptoms of ulceration, are moderate, a slight hectic or chronic fever, pulse small and under 100, and a gnawing dull pain, as if insects were about the part.

6. The local symptoms present the appearance of the part being worm-eaten; the surface is rough and very irregular.

7. Ulceration is sometimes extremely rapid, and extensively destructive: as much will be destroyed in a few hours, as will require weeks and months to repair.

8. The difficulty of the reparative process is in general proportional to the extent of surface destroyed; something will depend also, on the form of the ulceration, and the kind of surface exposed.

9. The ulcerative process has always a tendency to the nearest external surface of the body.

In consequence of this tendency, matter formed at a depth in the body, finds its way through the integuments, instead of proceeding through the more important parts.

10. This is a law in part depending on the less vitality and greater irritability of those parts, which are nearest the surface of the body. The external parts are most weakly, with respect to circulation, and most readily absorbed.

The external parts are not weakly with regard to the quantity of blood, for they possess a considerable share of vascularity; but they are weakly with respect to the living powers: they are more irritable, and more subject to vicissitudes of action, from corresponding changes of temperature, than other parts of the body; have less strength of circulation, and consequently, give way to ulceration more readily than those parts which are more deeply seated, and possess a greater strength of circulation.

11. Newly-formed parts of the body are more liable to be absorbed than those which have long existed.

A part covered by a cicatrix, proceeds rapidly to ulceration, because it is more weakly constituted, than those parts which have existed longer.

12. The irritability of a part is proportional to its weakness; and the parts which are weak and irritable, fall most readily into the ulcerative process.

13. The parts more remote from the heart, ulcerate more readily than those in the vicinity of the heart.

14. In those parts which are endued with little vital power, ulceration takes place very readily; while in those to which the quantity of blood sent, is very small, ulceration takes place with difficulty.

This circumstance must influence our practice. In abscess under the fascia, an incision should be made as soon as possible through the covering, to liberate the confined matter; so in abscess of the finger, when the constitution suffers because the theca will not give way to the process of ulceration, and the nervous system becomes irritated by the pressure of confined matter, an early incision should be made to liberate the matter, and give relief to the constitution. The same practice should be pursued in abscess of the palm of the hand.

15. The ulcerative process is useful to the animal economy, in removing extraneous bodies from the system; in the exfoliation of portions of bone, and in separating parts which would otherwise remain in the body for the remainder of life.

Thus a ball lodged in the body, and a ligature round an artery, are disengaged by the ulcerative process.

ABSCESSES.

1. An abscess is a collection of matter in a cyst, produced by inflammation, giving the surrounding parts a tendency to the ulcerative process, so as to lead to their absorption.

First, there is an inflammation of the adhesive kind in the cellular tissue, by which the different cells of the cellular membrane become filled with adhesive matter. A slight ulcerative process takes place, the inflammation still proceeding, and a little cavity is formed by the ulcerative process, a space being left for the effusion of pus, the result of the second stage of inflammation. A drop of matter is secreted into the cavity, and as soon as it is poured out, the pressure on the side occasions an increase of the ulcerative process, which adds to the cavity previously formed. More matter is then produced, and the surrounding solids, having a tendency to the ulcerative process, it is accumulated so as to lead to absorption of the neighbouring parts.

2. In the formation of an abscess, matter does not produce absorption of all the parts around equally, but it excavates chiefly on the side towards the skin, and very little in the opposite direction; therefore has no power of eroding.

3. Abscesses are dangerous according to their size, number, and situation.

4. In large abscesses, neither the danger or constitutional effects arise from the quantity of matter produced, but from the difficulty which nature has in repairing the devastation made by excavation of the solids, from the pressure of the matter.

Thy reasons worthy Madam Quakers [illegible] [illegible]
[illegible] then [illegible] is the cause [illegible] [illegible]
[illegible] [illegible] offered [illegible] [illegible]
[illegible] [illegible] them [illegible] —

An abscess may discharge a great quantity of matter, and the constitution may not have scarcely been affected by it; but very soon after it is opened, the constitution begins to suffer. Very large abscesses sometimes terminate favorably, but in a number of cases they destroy life.

5. A great number of small abscesses on the surface of the body, as in small-pox, frequently terminate fatally.

Here nature performs the suppurative process; the pustules die away, and the cuticle is separated from the surface of the body; but nature has not the power, in many cases, of repairing the destruction of the cutis; the exposure of the nerves of the skin, occasions great constitutional irritation, and the patient dies as if destroyed by a burn or a scald.

6. Abscesses are also dangerous, from their being situated in vitally important parts, such as the brain, heart, or lungs; and even though not situated in vital parts, they sometimes become dangerous, by their pressing on them.

Abscesses in the peritoneum, or between the prostrate gland and the rectum, will, by their pressure on the urethra, occasion irritation of that part, and sometimes complete retention.

7. When bones form the boundary of abscesses, the process of exfoliation takes place, and they become very long and tedious in the progress, and, in some cases, attended with a considerable share of danger.

8. Abscesses are either *acute* or *chronic*; the former, having a common course of three weeks; the latter, much slower in their progress.

With the acute abscess, the adhesive inflammation first begins; this is succeeded by the suppurative; and, lastly, the ulcerative process comes on; and it is generally three weeks from its commencement before matter is discharged.

9. The constitutional treatment of acute abscesses should be directed towards the secretion of the bowels, by sulphate of magnesia: and the nervous system and painful sensations relieved by opium.

The best medicine you can give, is three or four table spoonfuls, three times a day, of a mixture, made with six ounces of the Solution of Acetate of Ammonia, one ounce of Sulphate of Magnesia, and one drachm of the Tincture of Opium. By this medicine, you lessen irritation, and promote the suppurative and ulcerative processes.

10. The local treatment, consists in the application of fomentations and poultices, for by promoting heat and moisture, a greater quantity of blood is sent to the part, and a relaxation of the vessels takes place : this expedites the suppurative process, and that being done, the ulcerative process takes place with more ease.

The kind of poultice to be applied, is of little importance; linseed or bread poultices, are perhaps the best. No stimulating application would do.

11. In the suppurative process, prevent evaporation by covering the part with oil-silk : it preserves the heat and moisture, is clean, agreeable to the patient, and most conducive to his comfort.

12. If an acute abscess seems disposed to go through its different stages without any interruption, the best practice is to leave it undisturbed.

13. Acute abscesses, beginning under aponeurotic fasciæ, ought to be opened as early as possible ; the earlier the better. The moment one drop of matter may be felt to fluctuate, it is advisable to make a free opening, both as regards the constitution and the part.

14. Whenever matter can be felt close to bone, it will be right to open it, excepting in cases where it may occur from severe courses of mercury, between the cranium and pericranium.

In those cases where a fluid exists, between the pericranium and bone, unattended with any blush, do not open it; it will be removed by purging, and giving bountifully the Decoction of Sarsaparilla; but when matter is formed, and there is a blush, it will not be absorbed; an opening must be made, and exfoliation will often take place.

15. As in acute abscesses, we are called upon to diminish the state of excitement in the constitution ; so on the other hand, in chronic abscesses, we must do all we can to give the constitution additional powers, by allowing the patient a generous diet, and administering ammonia and bark.

16. Stimulating poultices should be applied to the part,

and when the abscesses are of an indolent nature, a stimulating plaster will prove serviceable.

The best poultices for the purpose, are made with yeast and oatmeal, or vinegar and flour, and these wetted with a solution of common salt. The compound galbanum plaster, mercurial plaster with ammoniacum, and soap plaster, are those commonly used; they excite the parts to action, and generally produce a slight local perspiration.

17. When it is necessary to open an abscess, you should do it early, particularly in exposed parts of the body, as the early discharge of matter is the prevention of scars.

Abscesses situated in the neck, or any exposed part, should be opened before the skin is much affected, and before a blush has appeared; thus scars will in general be prevented, and the incision should be made transversely, and not in the axis of the neck. When these tumours have acquired the hue of a grape, the veins are dilated, and they, consequently, should never be opened.

18. In common abscesses a small opening is sufficient, but when the matter is seated beneath a fascia, it should be more free. After the opening is made, the matter should be pressed out, and the wound poulticed, or the adhesive process attempted by pressing the sides of the cavity together, and retaining them in that position, (leaving a sufficient hole for the escape of matter,) by strapping; or, if necessary, by the application of bandages.

If the edges of the wound should not unite in any part, a little injection of Sulphate of Zinc or Copper may be used.

19. Hectic fever, sometimes attending abscesses, does not arise, as was formerly supposed, from absorption of the matter into the system; for, till after the abscesses have broken, the constitution is not attacked with it: still, however, the formation of matter will be attended with a slight fever, but not of the hectic kind; the tongue will be clean, the pulse very little affected, and the patient very slightly deranged; but after an opening is made into the part, constitutional irritation comes on, and life is then endangered.

20. The degree of hectic fever is not at all proportionate to the size of the surface on which the matter is formed; for in extensive sores of the leg, there will be little or no

inconvenience; whilst a sore on the lungs, of the size of half-a-crown, produces hectic fever of the most violent kind.

21. Old surgeons imagined, that the local irritation attending the opening of abscesses, was depending on the admission of air into the cavity, but from my own observations, and the result of many experiments, this is not the case.

GRANULATION.

1. A granulation is a newly-formed part, generally red in colour, and having the power of secreting pus; and is produced by a similar process to adhesion.

After opening an abscess, adhesive inflammation is produced in the internal surface of the cavity. A layer of adhesive matter is in this way thrown out, and if the sides of the abscess are brought together, by passing a roller round it, we may often prevent the future formation of matter; but if the union by adhesion, does not take place, then granulations are formed.

2. The manner in which granulations are formed, is as follows:—When an abscess is opened, or when a wound has been produced, if the edges are not brought together, inflammation is excited; and this inflammation occasions an effusion of the fibrin of the blood upon the surface of the wound. This fibrin is poured out in a layer upon the surface, and soon becomes vascular, for blood-vessels, which are elongations of the vasa vasorum of the divided vessels, are forced by the action of the heart into the fibrin which has been deposited.

The difference between the mode of union by adhesion, and by granulation, is, that in the latter, vessels shoot to the surface of the layer, which has been thrown out, terminating by open mouths on the surface of the newly-formed substance, and secreting pus, at the same time that a layer of fibrin is effused. The fibrin which is thrown out, besides the purulent secretion from the vessels, forms a second layer, into which the vessels shoot as before. The vessels supporting the first layer, are the means of supporting the second layer, where the vessels terminate as before, by open mouths on the substance effused. In this manner, layer after layer is formed, until the cavity becomes filled.

3. Granulations are usually exceedingly sensible, and very vascular, having nerves, arteries, veins, and absorbent vessels. The vessels are principally arteries, which throw a quantity of blood to the surface of the wound, and then secrete pus. There is a vein accompanying each artery, and the fluid conveyed by the vessels, is partly converted into pus, on the surface of the ulcer, and partly returned back to the heart.

Granulations which spring from parts endued with great sensibility, such as muscles, are extremely sensitive; but many granulations, such for instance, as arise from bones, have no sensibility whatever, unless, indeed, they spring from the cancellated structure.

4. Granulations appear to become vascular in the following manner :—An artery enters at the base of the granulation, and is there divided into radiated branches; from these vessels pus is secreted, and an incrustation is formed, producing a layer of adhesive matter on the surface of the granulation.

5. Granulations are not good absorbent surfaces in ulcers recently formed, but if the ulcers have existed for any length of time, the absorbent vessels readily take into the system any substance which may be applied to them. This should caution the use of arsenic, and any other poisonous application.

It is not an uncommon practice to inject a solution of a grain or two grains of Oxy-muriate of Mercury, into sinuses, for the purpose of stimulating the vessels. If the sinus has existed for a length of time, the Oxy-muriate of Mercury is frequently absorbed, and the mouth becomes affected in the same manner as if the mercury had been taken into the system, by rubbing it into the skin, or taking it into the stomach.

6. Opium, when applied to the surface of sores, is very readily absorbed into the system; and I believe it is often a very useful application. Its effects, when taken into the system, are the same as when it is introduced into the stomach, which are only to be removed by the free administration of active purgatives.

7. Granulations are very readily united to each other,

by bringing the edges of the two granulating surfaces together, so as to produce the adhesive process.

A knowledge of this circumstance, will save much time, for instead of waiting for the tedious process of the union of both surfaces, by granulations filling the cavity, you have only to bring one portion of the granulations in contact with the other, bind them well together with adhesive plaster, and they will be sure to inosculate.

CICATRIZATION.

1. Cicatrization is the formation of the new skin over a sore, and is effected by the vessels at the edge of the skin, forming granulations; and these granulations uniting with the granulations of the surface of the sore.

The granulations produced from the edge, proceed towards the centre, and those on the edge inosculate with those on the surface of the sore, and are united by the adhesive process. The vessels become elongated from the edge of the sore, and proceed in radii from the circumference to the centre. Day after day, an addition is thus made to the cicatrix, until at last, the vessels reach the centre from every part of the circumference; when the process of cicatrization is completed.

2. Some surgeons will say that cicatrization sometimes commences from the centre of the sore, and that the centre of the sore has in itself the power of forming new skin; but that is not the case, for the new skin in the centre is produced in consequence of the whole of the skin not having been ulcerated away, and granulations arising from that part of the skin which was left.

This only happens in irregularly formed sores, where the healing process has gone on to the centre, and then the sore has broken out in the circumference. If granulations arise from any portion of skin in the centre, these granulations produce new skin, and an insulated portion of skin is produced, forming a part of the cicatrix, which is not afterwards ulcerated away.

3. When a cicatrix is formed, in the first instance it is extremely vascular; but when it has existed for any length of time, the blood-vessels become contracted, and it is whiter than the original skin; loses its vascularity, and is endued with less living power than the surrounding parts.

4. The form and situation of a sore, very much regulates the readiness with which it is covered in by cicatrization; so that you may always expect, that a round sore will be longer in healing than a longitudinal one.

The reason is, that the vessels have to elongate much less from the edge to the centre, in a longitudinal than in a circular sore.

5. In the formation of cicatrices, the original parts may all be re-produced, except muscle and cartilage; a muscle unites by tendon, and the cartilages of the ribs unite by bone: This, however, will depend in some measure on the age of the person; for in very young subjects, cartilaginous union will be produced; but in subjects more advanced in years, the cartilages of the ribs invariably unite by bone.

The skin which is produced in a cicatrix, is true skin, the cuticle is very quickly re-produced, and the rete mucosum, after a short period. The cellular membrane is also re-produced, though it has at first the appearance of a solid fibrous mass, which requires some time before it is drawn into the reticular texture, similar to the original membrane. Tendons, bones, and nerves are also re-produced, but there is some little doubt, whether nerves assist at all in the restoration of sensation by anastomosis.

ULCERS.

1. An ulcer may be defined to be a granulating surface, secreting matter; arising from an inordinate action of the absorbents, produced by previous inflammation.

2. *Healthy Ulcers:*—When an ulcer is in a perfect healthy state, the granulations are red and small upon the surface, rising a little above the edge; the discharge of matter, of the appearance of cream; and the edge of the sore whitish, and nicely adapted to the surface.

The florid colour of the healthy granulations, is produced by the blood-vessels having a considerable quantity of arterial blood, and a free circulation. Their being raised above the surface of the sore is necessary, in order that a sore should heal kindly. By the edges of the sore being nicely adapted to the circumference, the granulations springing from the surrounding skin, unite with those of the surface.

3. When you open an abscess, or when a wound is produced, which cannot be healed by the adhesive process, you must encourage the growth of granulations, by the application of the gentle stimulus of poultices, and when the granulations have risen to the surface of the skin, press down the granulations of the edge on those of the surface, either by the application of adhesive plaster, or unctuous substances.

The more unctuous the substances are, the better; for the vessels will have a greater facility in shooting towards the centre, and the granulations embedded in this unctuous matter, will more readily extend along the surface of the sore.

4. Such are the principles of treatment applicable to ulcers in the healthy state; we shall now proceed to consider the impediments to the healing process, which frequently occur, and render a different mode of treatment necessary.

5. When there is too prominent a state of the granulations, (vulgarly called proud flesh,) rising considerably above the edge of the skin, they are necessarily prevented from uniting with those of the surface. In order to prevent the continuance of this state of the sore, the common treatment is, to apply dry lint to the centre of the sore, and some unctuous substance to the edges.

The lint, by its pressure, prevents the growth of granulations in the centre, while the unctuous substance allows the granulations on the edge, to proceed, and inosculate with those on the surface of the sore. The lint should not be applied to the edge of the sore, for if it is, the granulations will be prevented from proceeding towards the centre.

6. In those ulcers in which luxuriant granulations shoot up near the edges of the sore, our practice is just reversed; for instead of applying lint to the centre, we must use a kind of caustic, to destroy the prominent granulations at the edges.

The Nitrate of Silver, and the Sulphate of Copper, are the common caustic salts in general use. Adhesive plaster is also used to keep down granulations.

7. The common adhesive plaster is, usually, too sti-

Succeeded in healing an indolent ulcer of many years standing (over 13) arising from a syphilitic taint, by the using a solution of nitrate of silver in the proportion of [illegible] ʒj to ℥j applied every other day with a pencil brush and covering the sore with [illegible] cloth at the same time take one teaspoonful internally Tincture of Gentian [illegible] three times sulphuric acid.

mulating for the purpose; so that a plaster, composed of equal parts of the Emplastrum Thuris Compositum, and the Emplastrum Saponis, is a much better plaster to promote the healing of ulcers, than the common adhesive plaster.

8. Applications of too stimulating a nature, will sometimes excite inflammation and excoriate the skin, so that we are often under the necessity of leaving off the adhesive plaster: it sometimes happens, that the action is so great as to oblige us to apply sheet lead to the surface of the sore.

When this is necessary, you may apply a piece of lint covered with the ceratum cetacei; over these, a piece of sheet lead, and round the whole, a roller should be passed of about five yards in length.

9. *Indolent Ulcers:*—There is often great difficulty in the cure of ulcers, when they are of a languid condition, and the action too slight. To overcome this unhealthy state of the sore, the application most commonly used, is the Unguentum Hydrargyri Nitrico-oxidi; which occasions a determination of blood to the part, and produces a florid redness in the granulations, instead of the semi-transparent appearance which they assume in the languid state of the sore.

This mercurial application produces, however, a white appearance in the edge of the ulcer, arising from the thickened state of the cuticle, which prevents the growth of the granulations on the edge. This may be corrected by the application of the Unguentum Hydrargyri Fortius, to the edge of the sore. The Oxy-muriate of Mercury with lime water; and lotions, such as the Sulphate of Zinc, in the proportion of two grains to one ounce of water; or the Sulphate of Copper, in the ratio of one grain to three ounces of water, are frequently applied with the same view.

10. In addition to the means already mentioned for the cure of indolent ulcers, it will be highly useful to employ some stimulating plaster, such as the Emplastrum Galbani Compositum, for the adhesive plaster will not answer the purpose, the sores are languid, and the object is to increase the action in the part. This will be greatly assisted by giving the patient a generous diet, allowing him at the same time to take exercise, and, in fact, by doing every thing to improve the constitution.

11. *Inflamed Ulcers:*—Here you have a serous discharge from the sore; a bloody ichor, composed of serum and the red particles of the blood; a disposition in many cases to slough; the surface covered with a brown incrustation; and the skin and surrounding parts highly inflamed.

12. The treatment which is applicable to inflammation in general, will be of service in these cases, where inflammation has been kept up for a long time, to a high degree. Fomentations and poultices must be employed; rest and the recumbent posture be enjoined; and the general secretions of the body attended to, for without attention to the constitutional treatment, all your local applications will be of very little use.

Fomentations will tend to produce a secretion from the part; and poultices, by their soothing quality, to promote the growth of granulation: and both will evacuate the matter from the wound. After these applications have been applied, the vessels begin to form, and the sore assumes a better appearance: healthy secretions are thrown out, granulations shoot up, fibrous matter is deposited, and in a little time you will have the skin covering the wound.

13. *Gangrenous Ulcers:*—In ulcers of this kind, the surface is perfectly free from any discharge; the surrounding edges of a livid appearance, with small vesicles or blistered spots on them; and the patient suffers much from irritative fever.

14. In the treatment of these cases, you must adopt constitutional as well as local remedies: The recumbent posture must first be enjoined, as it is essentially necessary to promote the separation of the dead parts; a generous diet allowed; stimulating medicines administered; and moderate stimulating applications, to promote a slightly increased action on the part; sometimes, however, when the action is excessive, you must, on the contrary, sooth the part, and lessen the stimulating nature of your constitutional treatment.

The most approved constitutional treatment in these ulcers, is rest and generous diet; port wine should also be allowed, and spirits may be given to those who have been in the habit of using them: By brandy and opium I have seen these wounds cured; in fact, they

are our sheet anchor in the treatment of gangrenous ulcers. The best medicine to be administered is Opium and Ammonia; twenty drops of the Tincture of Opium, three times a day, with ten grains of the Ammonia, in an ounce and a half of Camphor mixture, and one drachm of Compound Tincture of Cardamoms.

15. When there is debility of the part, a slight stimulus should be employed, but when there is excessive action, it is to be avoided. The best application for producing a slight stimulus, and checking gangrene of the part, is the Nitric Acid; there is none equal to this; fifty drops of it to a quart of distilled water, is the average quantity; but this, however, may be increased or diminished, just as it may give pain to the part.

The other local remedies, in addition to Nitric Acid, are, the application of oil-silk to the wound, so as to prevent the smell arising from the parts, tainting the room:—Nitre, in the proportion of one drachm to a pint of water, agrees very well with the sore, and has the same effect as Nitric Acid, though in a diminished degree:—all the combinations of Nitric Acid appear beneficial. Sulphuric Acid is also of use in these cases, six drops of the acid to an ounce of water; but the Muriatic Acid is not to be recommended. Poultices made of port wine, porter, dregs of lees, yeast with meal, may all be used; as also the carrot poultice.

16. There is usually much difficulty in the cure of gangrenous ulcers, so that you must necessarily have recourse to a great variety of applications; for after you have tried one, which at the beginning did good, you will, from the wound getting worse under its use, be obliged to change it for another, and so on.

17. *Irritable Ulcers:*—May be known by the inequality of the granulations, the discharge of bloody pus, and the great tenderness in the part; so that the patient, when touched in that part, shrinks with excessive sensibility.

18. There is always considerable difficulty in the treatment of these sores; but the best local remedy you can apply, is one composed of one drachm of powdered Opium, with four drachms each of the Unguentum Cetacei and Unguentum Hydrargyri Mitius. This must be spread on lint, and applied to the part, twice a day.

19. Calomel and Opium are the internal medicines on

which you are to rely; a grain and a half of Calomel with a grain of Opium, morning and evening. These should not, however, be carried so far as to produce ptyalism, or to affect the constitution severely; but it should be given so as to restore the secretions, and to diminish the action of the nervous system.

Other aids, such as the Compound Decoction of Sarsaparilla, are sometimes used: I do not think much of it myself in these cases; but after the use of mercury, it diminishes the irritability of the constitution, and soon soothes the system into peace: with this view, and combined with other remedies, it may be beneficial.

20. *Sinuous Ulceration:*—Whenever a sore extends to any considerable depth, so that the discharge has to travel through a channel before it arrives at the surface, such an ulceration is called sinuous.

The cure of sinuses is rendered difficult,—first, from matter forming at the bottom, forcing its way through the passage, and, thereby, disturbing the healing process, by breaking down whatever adhesions or granulations form on its sides; and, secondly, the same interruptions, occur from the action of the muscles, when these ulcerations happen in muscular parts, thereby sometimes rendering (as in fistula in ano) a division of the muscle necessary.

21. Your object of treatment, in the cure of sinuous ulceration, must be to promote healthy granulation, either by cutting the canal open, and applying stimulants or caustics; or, if it should not be necessary to excite the part, by stimulating injections, such as the Tinctura Lyttæ; these will readily produce inflammation; adhesive matter will bé thrown out, and by taking care to keep the sides of the sinus in contact, the parts will permanently coalesce.

22. *Ulcers under Nails:*—Are sometimes exceedingly difficult to heal, from an irritation caused by a portion of the nail, producing fungus; but as soon as the projecting part of the nail is removed, the fungus will cease to grow, and the ulcer immediately heal.

A nail, for example, from pressure or some other cause, shoots into the skin beside it; a fungus springs up: the surgeon applies caustic and destroys it; in a short time it rises again: the caustic is repeated, and the fungus disappears; it speedily, however, returns, and will continue to do so, notwithstanding all his efforts to the contrary, unless he removes the irritating cause.

23. There are two modes of treating these ulcers; either the application of a blister; or introducing a piece of lint under the nail; the former brings away the cuticle and sometimes the nail along with it; the latter, however, is more lenient, and a better remedy.

Pare down the nail as thin as you can, without producing bleeding, then raise it a little, and introduce a small piece of lint: in this way, the irritating cause may generally be removed; but sometimes it happens, that the sore is so exceedingly irritable, that even lint cannot be lodged on its surface without producing increase of inflammation and pain; in such cases, I would recommend slitting up the nail with a pair of scissors, on that side where the disease exists, and then, with a pair of forceps, turn back, and completely remove the divided portion. The part should be poulticed after the operation.

24. The nail sometimes turns black from a disease of the gland from whence the nail proceeds: such affections are not uncommon, and are often thought to be syphilitic; this opinion, however, is erroneous.

You must wash the sore with the black wash, and administer Plummer's Pills:—sometimes, in these cases, we are obliged to dissect out the gland that produces the nail.

25. *Whitlow:*—This is an exceedingly painful swelling, terminating in an abscess by the side of the nail; the matter forms at first under the nail, but unable to force its way through that horny substance, burrows under it, thus producing excessive pain and irritation.

Fungous excrescences often arise in these cases, which induce the surgeon to apply caustic, but this ought never to be done. After fomenting and poulticing the part, remove the loose portion of nail; this will permit the matter to escape, and instantaneous relief is the result.

26. *Menstrual Ulcers:*—These are sores peculiar to the female sex, and are depending on amenorrhœa. Their peculiar character is, that once in three weeks or a month, they are covered with blood; so that they will one day be covered with pus, and probably, on the next, be covered with blood.

This state of affairs, is the result of a defective menstrual discharge, so that the superabundant quantity of blood, which ought to be voided in the natural way, is thrown back upon the system, and obtains an escape through the ulcer.

27. In these cases, in addition to local applications, you

must endeavour to improve the state of the constitution, by restoring the defective secretions.

Menstrual ulcers should be well moistened with the black wash, and the patient should take about an ounce and a half of the Mistura Ferri cum Myrrhâ, twice or three times a day; and five grains of the Pilulæ Hydrargyri Sub-muriatis Compositæ, every night at bed time.

28. *Chronic Carbuncles:*—An ulcer of the cellular membrane, or what is called chronic carbuncle, occurs when the health is impaired:—a small swelling forms under the skin, at first red, then turns purple, and ultimately sloughs: a white substance is soon perceived at the bottom of the sore, and as soon as this comes away, healthy granulations will rapidly form, and the wound become healed.

29. As these cases appear to arise from an impaired constitution, the general health must be improved by administering aperients and alteratives; and in cases of great debility, by giving the Carbonate of Ammonia. In your local treatment, you must excite the granulating process by poultices, or if they will not answer, by slight stimulants, as the black wash, or caustic.

If any one medicine improves the nervous system when deranged, more than another, it is the Carbonate of Ammonia. Half a drachm of Ammonia, with half an ounce of Compound Tincture of Cardamoms, and five ounces and half of Spearmint Water, is my usual mixture: two table spoonfuls two or three times a day.

30. *Superficial Ulceration:*—It not unfrequently happens, the skin, in various parts of the body, gets into a state of superficial ulceration, and without any evident cause.

The cure of superficial ulceration is best effected by the local application of either the Black Wash, the Unguentum Hydrargyri Nitratis, or the Unguentum Zinci-oxydi; and the internal use of the Oxy-muriate of Mercury, in conjunction with the Tincture of Bark, more especially when the ulceration is connected with disease of the mesenteric glands.

31. *Noli me tangere:*—This is a disease of the face, which has not yet been correctly described; the truth is, that it is an ulceration of the glands or follicles of the nose, those small cavities from which you can squeeze sebaceous

matter: the ulceration extending deeply, at last, even the cartilages of the nose become destroyed.

32. The plan of treating this disorder will depend upon circumstances, for if the ulcer is deep, you must use an arsenical preparation; but if it is not deep, you may cure it by merely painting the surface of the sore with a solution of the Nitrate of Silver.

The arsenical preparation which I always use, is one ounce of Spermaceti Ointment, and one drachm each, of Oxyde of Arsenic and Flowers of Sulphur, well incorporated:—You must spread some of this ointment on lint, lay it on the ulcer, and leave it there for twenty-four hours; then remove it; a slough will come away; you dress the ulcer with some simple ointment, and in a short time it will generally heal.

33. Deep ulcers having a malignant aspect, often remain in the face of old persons without producing any bad consequences. The best application is the black wash.

34. *Ulcers from Varicose Veins:*—These are ulcers most frequently situated in the lower extremities. They are the result of inflammation produced by an impeded venous circulation; and as soon as the inflammation is set up, the sequel is desquamation of the cuticle; then the whole face of the surface covering the diseased veins is formed into a crust, under which a quantity of serum is secreted.

A varicose condition of the veins may arise from many causes; but the more immediate one appears to be, either a thickening of the valves, so that they are incapable of approximating, or a rupture of the valves; in either case, the effects will be the same,—the veins being distended and serpentine, and the valves widely separated from each other,—the arteries, by their powerful attempts to return the blood to the part, soon excite inflammation; and ulceration quickly supervenes.

35. In the treatment of these ulcers, the recumbent posture must be strictly enforced. Lint wetted by the mercurial wash, should be laid on the ulcer, oil silk over these, and then the limb should be well and regularly bandaged, beginning at the foot. Opening the veins about twice a week, if necessary, is a very safe and effective practice; then applying a bandage, and keeping the parts wet by means of an evaporating lotion.

If the punctures, at any time, should not unite, but fret into ulcers, you must apply the black wash.

36. In persons who have been subject to varicose veins for a length of time, the crust just alluded to, will come off, and hemorrhage follow; but by placing the patient in a recumbent posture, applying a bandage, and keeping the parts constantly cooled with the spirit wash or cold water, you will, in all probability, get rid of the disease altogether.

It was formerly the practice, when the veins were in a varicose state, to tie and divide them; but it is a practice replete with danger, therefore let me exhort you never to sanction it. Another overwhelming objection to the operation is, that when it does not prove fatal, its ultimate effects are perfectly nugatory.

37. *Ulcers in Joints:*—These arise from an inflammation caused by a deposition of the Urate of Soda, so that persons will come to you with many joints open from this cause, and the cartilages more or less absorbed. If it is necessary, you must increase the openings through the skin, and remove the urate of soda, that being the exciting cause.

38. *Use of Ulcers:*—Ulcers are sometimes very beneficial to the general health; they are frequently formed for the purpose of allowing the discharge of extraneous bodies; when such substances become lodged, therefore, in any part of the human frame, inflammation is excited; pus becomes secreted, which pressing towards the surface, ulceration takes place, and the extraneous substance is thus afforded an opportunity of escaping.

39. Ulcers frequently occasion exfoliation of bone, to a very considerable extent:—here you can assist nature by applications which act chemically on the parts; therefore apply a lotion composed of Muriatic Acid and water, or Nitric Acid and water.

This wash will dissolve the phosphate of lime, or earthy matter of the bone; and by removing this inanimate substance, the power of the absorbent will be increased, and a quicker separation of the diseased from the healthy parts, be the consequence.

40. *Edges:*—The process of healing ulcers is occasion-

ally very much impeded by a thickened state of the edges, to obviate which, the edges must be adapted to their surfaces.

The Emplastrum Galbani Compositum will remove the indurated cuticle, and stimulate the parts to action; if this, however, should not succeed, you may use the Unguentum Hydrargyri Fortius, or Unguentum Lyttæ; or you may scarify the edges.

41. The edges of sores are sometimes very much *inverted*; for which the usual constitutional medicines are to be given, and Nitrate of Silver applied to the edges, and the black wash to the surface.

42. Some sores have their edges very much *everted*, and this affection is commonly symptomatic of a cancerous diathesis: the usual method of treatment is to poultice such ulcers, and to attend particularly to the general health, until the edges have resumed a natural and healthy state.

The admirable mode recommended by Mr. Baynton, should be had recourse to, which by approximating the sides of the wound, and thus facilitating the process of granulation and cicatrization, will surprisingly contribute towards the completion of the cure.

GANGRENE.

1. Gangrene is a partial death, or the death of one part of the body, while the other parts are alive:—It is produced either by excess of inflammatory action, where the powers are natural; or by a less degree of inflammatory action, where the powers of the part are feeble.

In mortification or gangrene, the arteries, enfeebled by excessive action, or incapable, from any cause, of carrying on circulation, are deprived of their vitality, the blood coagulates in them, and the death of the part is produced.

2. The symptoms of gangrene differ according to the manner in which it is produced.

3. When gangrene is the result of high and active inflammation, the pain attending its production is exceedingly severe; the inflammation is very extensive; there is usually a blush to a considerable extent; and there is

generally, though not always, a considerable degree of swelling.

Under these circumstances, the secretion from any sore which may exist, ceases; for the skin no longer perspires. The surface of the skin becomes of a dark colour; it is said to become purple, but it is rather of a brownish tinge. The cuticle is raised; a vesication is produced, and when this breaks, it is found to contain a bloody serum. When the serum is discharged, the skin assumes the gangrenous appearance, and becomes perfectly insensible. The vesications extend to parts beyond the ulceration.

4. The constitution suffers considerable derangement from gangrene; there is a high degree of irritative fever—quick, very small and thready pulse; generally irregular—usually delirium, and it is also attended with vomiting and hiccough.

Hiccough is the characteristic sign of gangrene, situated in whatever part of the body it may be. The fact is, that when gangrene arises from a diseased state of the constitution, the stomach is extremely deranged, and this derangement of the stomach is followed by a spasmodic contraction of the diaphragm, producing hiccough. Hiccough may be arrested for a time, either by cold water, or a slight stimulant.

5. We have just related the symptoms when gangrene is the result of excessive action: we will therefore proceed to speak of it, when it is the effect of a low degree of inflammation; as from cold or any other analogous cause.

When a great degree of cold has been applied to any part for a considerable time, the part will become benumbed; that is, its nervous powers will be diminished; and when it is thus enfeebled, it will be unable to bear a very slight degree of supervening inflammation, so that gangrene will be produced.

6. When you receive cases of this kind, be cautious that heat is not too suddenly applied; for even the common heat of the bed, frequently occasions inflammation, which is extremely liable to proceed to gangrene, in consequence of the diminished nervous influence of the part.

7. When gangrene is the result of either circumstance we have mentioned, the process of separation soon takes place, and it is one of the most curious operations of nature, in the human body.

Under its influence, even large members are destroyed, without any danger from hemorrhage, or the smallest jeopardy to life.

8. When the process of separation takes place, the first appearance we observe is a white line; at this white line, the cuticle is raised, and in a day or two separates, leaving a chasm beneath it, produced by the absorption of the living skin in contact with the dead:—the next part which begins to separate is the cellular tissue immediately under the skin; afterwards the muscles nearly opposite the edge of the skin. Tendons, like the cellular tissue, do not separate opposite the skin, but at a considerable distance from the part at which the sloughing takes place; for tendons are incapable of resisting the inflammation. The nerves separate in the same manner as the muscles; the arteries and veins become as it were hermetically sealed with coagulum, and also suffer in the general destruction; and lastly, the bones themselves exfoliate and the limb is completely removed.

Since the white line alluded to, is the barrier which nature sets up between the dead and the living parts, it is anxiously looked for by the surgeon, as it becomes a criterion of the cessation of mortification. The elevation of the cuticle at the white line, is a vesication which forms a line of circumvallation around the gangrene. The living skin taken up by the absorbents is carried into the constitution; the absorbent vessels act on the living parts, but not on the dead; nor is the dead skin absorbed after the time when granulations have formed, but it becomes loose, and ceases to be attached to the surrounding parts; the chasm formed by the absorbent vessels affording an opportunity for separation. Gangrene proceeds to much greater extent in the cellular tissue, than in the surrounding skin, because the cellular membrane is a part of weaker living powers: it is for this reason that a sloughing disposition in sores extending to the cellular membrane is so dangerous. Wherever skin separates, the muscles give way; a line of separation is formed, and the living portion of muscle is taken from the dead. Bones are very slow in the process of exfoliation; hence they are often taken away, when the process of separation is in other respects complete.

9. During the progress of mortification, nature has provided against hemorrhage, on the destruction of the blood-vessels, so that even the larger arteries are cut through without any bleeding, or danger of the patient's life.

This happens in the following manner:—The blood in the vessels of the dead part becomes coagulated; the coagulum, however, does not confine itself to the dead part, but extends to the living vessels which join it, and is, in this manner, glued to the inner side of the artery, so that the vessels are, as it were, hermetically sealed.—The same thing takes place in veins, the coagulum adhering to the inner side of the living vein, so that no blood can escape. The arteries are not only sealed at the part through which nature cuts it, but at a considerable distance above it, in order to provide against the danger which would arise from a separation of the coagulum.

10. Gangrene is frequently the effect of a debilitated state of constitution:—whatever, in short, weakens the general health much, disposes it to the production of gangrene; for the body, when thus debilitated, cannot bear any excess of action. It is also sometimes depending on an impeded circulation, whether arising from cold, from pressure, or from a want of natural strength in the circulation, so that the parts are not nourished in their accustomed manner.

It may be stated, as a general principle, that gangrene generally arises from inflammation, and is occasionally the consequence of disease unaccompanied with inflammation, by which the circulation is considerably impeded.

11. *Treatment:*—If gangrene is likely to result from inordinate action, we should endeavour to relieve the part by local abstraction of blood with leeches, and the application of soothing poultices. It will be necessary at the same time, to attend to the general health; for the best means of preventing gangrene, are to restore the secretions by calomel, and to diminish irritability by opium; and in some cases, by taking away very small quantities of blood.

In this metropolis, it is seldom safe to take blood from the arm of patients, to prevent gangrene; but in the country, a different practice may be pursued. When you take away blood, however, do not take more than eight or ten ounces, lest the vigour of the circulation, and consequently the nervous powers of the constitution, should be too much diminished.

12. If gangrene is likely to arise from the application of cold, the treatment must be different;—in these cases, the action of the parts is feeble, from the diminution of nervous power, and it will be proper to restore it to a healthy state by stimulants of the most gentle kind. For

this purpose, the best application is the camphorated spirit of wine, accompanied with gentle friction.

If you are called to a patient whose feet are benumbed from the effects of cold, you must sit by his bed-side, pour camphorated spirit into your hand, and rub it on his feet with the utmost gentleness, so that the part may not be irritated by violent friction. When the first effects of cold are removed, it will be proper to apply cold poultices; for warm applications are to be carefully avoided. When parts are frost-bitten in colder climates, the common practice is to restore the circulation by rubbing them with snow.

13. We have now concluded the means of prevention; we will therefore proceed to speak of the treatment, when gangrene has commenced:—As soon as gangrene has commenced, it will be necessary to apply a gentle stimulus to the parts, with a view of supporting the action of the surrounding parts which are threatened with the destruction of life.

Poultices of stale beer grounds with linseed-meal; spirituous fomentations; port wine poultices; turpentine, particularly in sloughing sores, arising from impeded circulation; yeast, and a composition or vinegar and camphor mixture, have all been beneficial in gangrene.

14. When the dead are separating from the living parts, the epithema plumbi sub-acetatis of the Hospital, is a very useful application; during the sloughing process, the nitric acid; when the gangrene stops, and the line of demarcation is drawn, and the sloughing process is commencing, the same acid may be employed in the proportion of fifty drops to a pint of water.

The epithema consists of one ounce of the conserve of roses well mixed with two drachms each of the honey of roses, tincture of opium, and the solution of sub-acetate of lead. These are the different modes of treatment for the prevention of gangrene, and of arresting the sloughing process. We will next proceed to speak of the propriety of amputation.

15. *Amputation*:—There is no occasion in general for amputation in cases of gangrene, when the sloughing process is going on; if you will be content to wait a short time, and the patient is disposed also, you will find the parts will separate as well without as with an operation.

The cases in which you are called upon to perform the operation, are when the patient will not be able to sustain the shock to the constitution; then, if gangrene be going on in any part, or through the middle of the leg, by which the power of the constitution will be nearly destroyed, you may have recourse to an operation; but even here, there will not always be occasion for it. Always, if you can, give the patient a chance of his life, without resorting to it.

16. In constitutional gangrene, never amputate till the general health is good, the sloughing process commenced, and healthy granulations are to be seen on the surface of the sore; for if an operation is performed, the parts will assume exactly the same appearance as before it.

17. When gangrene arises from an accident, or defective action from pressure on some important vessel, amputation may be performed, without the least hesitation.

18. Old persons are very subject to gangrene of the toes and feet, arising from ossification of the smaller arteries; which losing their elasticity, and combined with a debilitated action of the heart, give rise to this disease:—It is attended with some degree of fever; the cheeks are of a florid red colour, and the constitution becomes considerably influenced.

The appearances which the part assumes, are these:—at first it is red and painful; the person, thinking little of the matter, puts upon the affected part a piece of linen; in a few days the cuticle comes off, and there issues from the surface a sanious discharge; red streaks are now seen passing from different parts of the foot, up the leg; and the glands in the groin often undergo considerable inflammation and enlargement; all the absorbent vessels of the foot becoming inflamed, produce universal redness of the diseased member. Soon after this, the gangrene begins to extend, destroys the whole of the foot, and passes to the upper part of the leg, where it usually stops.

19. This gangrene will not commonly destroy life, if attention be paid to the patient:—a poultice composed of port wine and linseed meal, will be found the best local application; and your internal remedy should consist of opium combined with ammonia. Never amputate, whether there are healthy granulations or not, for as surely as you do, mortification of the stump will supervene.

ANTHRAX OR CARBUNCLE.

1. Carbuncle is a hard and circumscribed inflammatory tubercle like a boil, which sometimes forms on the cheek, neck, or back, and in a few days becomes highly gangrenous.

When carbuncle is about to take place in any part, it is generally preceded by pain, and at first a swelling of considerable hardness; this is occasioned by the adhesive inflammation ; the surface of the tumour then assumes a livid redness and a spongy soft feel; little ulcers now form on the skin, which, from their number, give it a sieve like appearance, so numerous are the orifices: from these a white discharge passes; this fluid resembles water and flour mixed together, and a surgeon who has seen much of carbuncle, knows the nature of the disease immediately upon seeing the discharge. When the little openings are all formed into one, the dead cellular membrane begins to escape, for it previously cannot do so, from the smallness of the apertures.

2. Carbuncles do not generally prove fatal ; unless indeed, they are situated in the head or neck, but in these cases effusion takes place between the tunica arachnoides and pia mater, and death is the consequence.

3. The peculiar treatment of carbuncle consists in making upon the surface of the swelling, at an early period of the disease, a large crucial incision, for the purpose of affording the deadened parts an opportunity of escaping, then applying the port wine poultice, and giving the patient such stimulants (ammonia with opium), as will tend to increase the vigour of the constitution.

ERYSIPELAS.

1. Erysipelas is an inflammatory, cutaneous, and slightly elevated swelling, having a disposition to extend itself :— it is sometimes ushered in by fever, at other times not :— the appearances are a florid redness of the skin with vesicles, containing an amber-colour secretion under the

raised cuticle, and these distinguish it from common inflammation.

You must not consider all cases of inflamed skin, erysipelas, for cases have been treated as such, where it would have been right to deplete.

2. Certain constitutions are sooner affected by erysipelas than others, and often its effects appear to be purely local. It generally makes its appearance in spring and autumn, but seldom in winter:—it is sometimes epidemic, and sometimes contagious:—whatever renders the body irritable, predisposes to erysipelas, and after a person has once had it, he is very subject to it again; some persons also appear predisposed to its formation.

The head seems to be more commonly affected by it than any other part; it often succeeds the most trifling injury to the scalp; and, like carbuncle, when it occurs in this situation, generally destroys life.

3. With respect to the treatment of this affection, that must depend upon the constitution you have to deal with, and whether you are practising in the town or in the country. In London, the best thing you can do, is first to give calomel for restoring the secretions of the liver and intestines; then allow a generous diet, and administer the ordinary tonics.

You will find, where erysipelas attacks the lower orders of this town, who weaken their constitutious by the excessive use of ardent spirits, that giu may he sometimes advantageously employed as a remedy, at once being the evil and the cure.

INJURIES OF THE HEAD.

1. In considering the subject of injuries to the head, it is necessary to bear in mind that an immediate communication exists between the stomach and brain, by means of the eighth pair of nerves, or par vagum; that the brain is the medium through which the mind is communicated; that the great sympathetic nerve is, as it were, a system complete in itself, though bearing a connection with the brain; and that the nerves are freely distributed to every part of the human frame, and are the means by which all voluntary and involuntary motions are maintained.

2. When the brain receives an injury, the symptoms stated to be the result of that injury are, general loss of sense and volition, if the injury be considerable; but if not so severe, some portion of sense and volition will remain.

When you are called to the bedside of a person thus situated, you will find him to be what is termed comatose; if you speak sharply to him, he becomes roused for the moment, mumbles some brief answer to you, and again lies down and relapses into his former sleepy state; thus you observe partial mental faculties and volition still remain. This symptom you should minutely note, as it will greatly assist you in your after diagnosis; and you should be upon your guard you are not deceived by the person being intoxicated.

3. In addition to loss of sense and motion, there is sickness; a laborious pulse, but quick on exertion; dilated pupils; and sometimes bleeding from the nose, which when the patient has been kept lying on his back, often occasions vomiting of blood; the fæces pass off involuntarily, and the urine is retained without power to evacuate.

To mention more symptoms, there is often partial paralysis or hemiplegia; occasionally, squinting is produced, the natural direction of one or both eyes becoming changed; permanent, partial, or total aberration of the mental faculties may also be added to the consequences already named. Injuries to the head are very dangerous, and persons usually fall victims to them.

CONCUSSION.

1. Concussion is simply a shock which the brain has received, more or less severe, and attended with laceration or not. The best marked symptoms are, increased motion of the carotids; an apparent tranquil sleep; the instantaneous relapse to that state after being roused; a remarkable excitement of the pulse upon using exertion, and the insensibility having immediately followed the accident.

When called to a person whom you find in a state of stupefaction, but not to a great degree, regular pulse, tranquil and regular breathing, and the accident has existed some hours, you will generally be justified in pronouncing that the injury has been trifling; but when the individual has been first seized with vomiting, is incapable of using any muscular power from loss of nervous influence, a total aberration of the mental faculties, with intermittent pulse and breathing; these will be found the diagnostic symptoms of severe injury, and the case is a dangerous one.

2. The diminution of the operations of the mind is often so great in concussion, even where considerable voluntary motion remains, that you cannot possibly get any other answer from your patient, than "eh!" delivered in a gruff undertone.

The extraordinary changes which the memory sometimes undergoes from the effects of concussion, is worthy of observation, for cases are related in which persons, on recovering, found they had lost all recollection of a language which they knew previously; and recent occurrences were not so well remembered as those of their younger days.

3. With respect to the brain under concussion, when the concussion is not extremely violent, there is merely a change in the circulation, and a corresponding loss of sensibility; but when the circulation is restored by proper means, the powers of the mind will return with those of the body. On the other hand, if the concussion is severe, there will be laceration, accompanied with extravasation of blood, and the symptoms will be found to run into those of compression.

Dissection has pointed out, that when the concussion is very violent, a laceration of the brain takes place, accompanied with extravasation of blood, but when it is slight, no appearance can be discovered which indicates any alteration of structure.

4. *Treatment:*—The great danger we have to guard against, in the treatment of concussion, is inflammation of the brain. This must be prevented by taking away a very considerable quantity of blood, and other reasonable means of reducing any inordinate action which might follow.

By bleeding largely at first, we not only remove existing inflammation, but we prevent that which would otherwise occur. This practice, although denied by some, may be carried to excess; regulate your conduct by the symptoms, observe whether there is any hardness in the pulse, and whether he complains of any pain in the head, if he has still the power of complaining; watch your patient with the greatest possible anxiety; visit him at least three times a day, and if you find any hardness of the pulse supervening after the first copious bleeding, take away a tea-cupful of blood, but do not go on bleeding him largely, for you would by this means reduce the strength of your patient too much, and prevent the reparative process of nature. A necessary degree of inflammation is absolutely necessary, but it must be kept within bounds.

5. You are to use bleeding as a means of preventing

inflammation, and not as a matter of course, the moment you are called to a patient under concussion. You will always find the pulse very weak, or scarcely perceptible, at the moment of the injury; wait till the pulse rises and re-action is indicated, then extract blood.

6. Emetics I have seen of considerable use in these cases, but I never order them for three or four hours after the accident, lest there should be extravasation of blood in the brain, or any tendency to apoplexy.

Vomiting acts beneficially in simple cases of concussion, by relieving the stomach of its contents, as the accident generally happens to persons in a state of intoxication; and also by propelling the blood to the brain, and thus restoring the powers of life.

7. With respect to the exhibition of cathartics, the bowels should be kept open by calomel purges, followed by the infusion of senna and sulphate of magnesia.

The calomel should be given about two hours after the accident; and it will be useful to give to the patient, at the same time, a quantity of mild fluids to drink, as by this means, a disposition to purging is kept up, counter-irritation is, as it were, produced, and the blood is drawn from the brain to the intestinal canal. Calomel, with lemon-juice squeezed in water, should also be given.

8. Perspiration on the surface of the body, should be obtained by antimonials; and when all other means of reducing inflammatory action have failed, blisters may sometimes be used with decided benefit.

9. In addition to the means already named for the treatment of concussion, you must pay strict attention to the mind; excessive anxiety must be prevented; for if you suffer the mind to be disturbed, you do little or nothing towards the recovery.

10. In the treatment of concussion, with children, you cannot always bleed from the arm; you must therefore open the jugular vein, apply leeches to the temples, and give calomel with mild drinks, so as to purge them.

11. For the after symptoms of concussion, as pain in the head, or sickness at the stomach, trephining was for-

merly much employed, but it is a practice full of danger, and of little or no use whatever:—make an incision through the scalp; put issues in; wash the head with spirits of wine and water; use the shower-bath two or three times; and they will be found the best means of giving power to the system, and bringing the action of the brain into a healthy state.

COMPRESSION.

1. When a person is labouring under compression of the brain, it is known by the breathing being stertorous, the pulse slow, and the pupils dilated; to which may be added the symptoms of concussion.

2. The causes which produce compression are these three; extravasation of blood, fracture with depression, and formation of matter within the skull.

3. When the brain is compressed by extravasated blood, the symptoms do not directly occur; the person at the time of the injury is often stunned, recovers himself, and a short time after falls into a comatose state, and then the apoplectic stertor begins.

Extravasation with concussion, renders the case of a different nature; then the symptoms of concussion come on first, and the apoplectic stertor and other symptoms of compression succeed.

4. The extravasated blood is found in three different places: first, between the dura mater and pia mater; secondly, between the pia mater and brain; and lastly, within the substance of the brain itself.

These are the three different situations in which extravasation of the blood is principally formed: but I do not find any difference of symptoms produced by the different situations; the compression is produced by the pressure of the blood, and the quantity of blood effused will depend on the size of the vessels of the dura mater that are divided. If there should be any blood resting on the origin of a nerve, there will be partial paralysis of the part which the nerve supplies.

5. In the treatment of these cases there is little to be

done. If extravasation of blood occurs with fracture, the trephine may be used. You should deplete freely, for the purpose of preventing inflammation, and lessen irritation, by enjoining quietude, and opening the bowels.

If there is a bruise near the fracture, indicating the spot where the blood is effused, you may trephine, that is, before symptoms of excitement come on: when they take place, you must deplete only, and not dream of performing the operation on any account whatever.

FRACTURES OF THE SKULL.

1. Fractures of the skull are not of themselves dangerous, nor are they injurious to the brain, if care be taken to prevent inflammation. The danger is to be apprehended from compression of the brain, extravasation of blood, or irritation in some distant part.

Therefore, when called to a case of fracture of the skull, you do not operate, but consider the symptoms that are present, endeavour to ascertain from what they arise, and then regulate your treatment accordingly; if the symptoms are those of concussion, the treatment must be directed to it; if those of extravasation of blood, and there is not much excitement, it will be necessary to remove a portion of bone; but if there be fracture only, without any of the symptoms above-mentioned, there will be no occasion to operate.

2. When a fracture occurs at the base of the skull, it is much more dangerous than at any other part, because extravasation of blood is much more likely to take place; or if not, inflammation of the brain, from the violence of the injury received, very often supervenes. They are produced by falling on the summit of the head.

The base of the cranium may be more or less injured, according to the circumstances of the accident. If there is a transverse fracture through the foramen magnum, cuneiform process, and part of the temporal bone; a discharge of blood into each meatus auditorous takes place, and when there is no other mischief, deafness often remains for life. Should the skull be fractured over the frontal sinuses, when the fracture is simple, if the nose be blown, the air escapes through the opening in the bone, and getting into the cellular membrane under the skin, renders the forehead emphysematous. If, on the other hand, the fracture is compound, upon blowing the nose, the air rushes through the wound. The cranium may be fractured in other different ways, but these two I have mentioned more particularly, on account of their characteristic symptoms.

3. Fractures of the skull, if unaccompanied with concussion or compression, as readily unite as fractures of the bones in any part of the body.

When large holes are made through the skull, (as in trephining), the apertures do not again become filled with ossific matter, but by a tendinous structure formed from the bone and dura mater. When the bones of the skull, in fractures, are widely separated, the interspace will not become filled by bony matter, but remain open.

4. When there is simple fracture, unaccompanied with symptoms of injured brain, you must not trephine, neither in compound fracture; but you must, by the application of adhesive plaster, endeavour to heal the wound in the scalp as quickly as possible; and let your constitutional treatment be that of depletion, by means of blood-letting and purgatives.

This plan often removes symptoms of concussion, and even extravasation, which accompany these fractures; and often a few hours will shew you that the application of the trephine, which you at first might have thought indispensable, is wholly unnecessary.

5. When there is fracture with depression, the treatment must differ very materially, according to the extent of injury, as being a simple fracture or compound.

There are one or two injuries of the head, which it is necessary should be borne in mind, to direct your diagnosis on being called to accidents of the kind. Sometimes a person receives a blow on the scalp; the parts immediately surrounding the spot where the blow was received, will rise (from the extravasation of blood) two or three lines higher than the part itself; for there, the cellular membrane, having been condensed by the injury, will likewise tend to increase the deception: thus the surrounding parts are considerably higher than the middle, and the external character of the contusion is certainly calculated to deceive. Again, it very often happens in fractures of the cranium, that considerable depression of bone will take place, from the external table of the skull being driven into the diploe, and without producing the slightest injury to the internal table; these fractures, however, can only occur in those of a middle age, for in the very young, and in very old age, the skull is thin and without diploe. These cases sufficiently show that you ought not to be too precipitate in your diagnosis, nor hastily determine upon performing an operation, which you might afterwards have reason to repent.

6. If the fracture is simple, and there is no wound in the scalp, and no symptoms of injury to the brain, you

must not trephine. Even if there are symptoms of injury to the brain, and the fracture is simple, do not immediately trephine. Take away blood, and purge your patient freely, and see how far the symptoms may be the result of concussion of the brain, and not of depression.

Inflammation rarely follows a simple fracture with depression, but very often follows a compound fracture; you must therefore be very cautious of rendering a simple fracture compound by the operation of trephining.

7. When fracture with depression is of the compound nature, you should immediately trephine or elevate the depressed portion of bone, for as these cases are usually attended with inflammation, you must not wait till the inflammatory symptoms come on, but at once proceed to remove the cause of depression. If inflammation comes on, the patient will die, whether you operate or not, and you will be so far from arresting its fatal progress by trephining, that you only will be adding to the danger. Inflammation does not always follow these injuries, but it is always advisable to secure the life of our patient by operating.

The rule, therefore, which I always follow, is this:—When I am called to a fracture, with depression, which is exposed to view, I generally use an elevator, and very rarely the trephine. I put this under the bone, raise it up, and if it has been comminuted, remove the small portions of bone. If, however, one bone is wedged within the other, I apply the trephine for raising the depressed portion of bone. The elevation of the bone is never followed by any mischief; but if you do not raise it, and inflammation follows, it will be too late to attempt to save the life of the patient.

8. It sometimes happens, in fracture of the skull, attended with depression, that a small spicular portion of the bone will project into the brain, so as to produce and support epileptic symptoms, but let this be removed, and the symptoms will subside.

WOUNDS OF THE BRAIN.

1. Wounds of the brain will often happen without producing any interruption to the operations of either the

mind or body. But should the wound be accompanied by compression or concussion, then the particular symptoms which characterize those injuries, will be present.

If the wound is a simple incision or laceration, it will prove quite harmless. Indeed, it frequently occurs that considerable portions of the brain are lost, and yet the mental and bodily functions continue unimpaired. Epileptic fits and hemiplegia certainly sometimes follow these injuries.

2. It occasionally happens, when a portion of brain has been lost, that a piece of the cranium will, by being driven in, occupy its place; and if in these cases, no symptoms of compression manifest themselves, you must not elevate the depressed bone; for were you to do so, you would, in all probability, give rise to extravasation, or increase the hazard of inflammation.

3. The danger attending injuries of the brain, arises principally from two causes; the formation of fungus, and from inflammation.

4. *Fungus:*—When the brain receives a wound, you must commence your curative exertions, by abstracting as large a quantity of blood from the system as the constitution of your patient will bear; not, however, to such an extent as to prevent the restorative operations of nature. After some days have elapsed, the divided parts begin to unite by means of the adhesive process; but if this process cannot effect a cure, granulations form, which at length project through the opening in the skull, and give rise to fungus.

5. When this is the case, the safety of your patient will depend on the treatment you adopt; for if you do not repress the growth of the fungus until the dura mater heals over it, there will be violent constitutional irritation, and the life of the patient in jeopardy; but, on the contrary, if you attend to the condition of the wound, and prevent the fungus from rising, there will be, comparatively speaking, but little danger.

Your treatment should be as follows:—Apply to the fungus a piece of lint wetted with liquor calcis, and over this, strapping of adhesive plaster; when you examine the part on the following day, you will

find the fungus considerably diminished; you are then to use a thicker piece of lint, and the strapping as before; you must pursue this plan until you have succeeded in getting it even with the dura mater, in which position it must be cautiously preserved; when, at last, the dura mater heals over it, and your object is accomplished.

6. *Inflammation:*—Wounds of the brain are dangerous from the inflammation which supervenes, and which danger is increased, if the dura mater is the part attacked. When inflammation attacks the membranes, symptoms of irritation will be present: but if the brain itself, they will be those of compression.

The ordinary symptoms are, great pain in the head; the scalp œdematous round the external wound; the edges of the wound have a shining, glossy appearance; and there is a discharge from the wound itself, composed of serum and blood; sometimes the parts about the wound have a sloughy appearance; the countenance is very much flushed, and the carotid arteries beat with very great force; there are very frequent rigors; sometimes hemiplegia; and the patient very quickly falls into a comatose state.

7. Inflammation of the brain is more slow in its occurrence after an injury, than inflammation after an injury of another part. It is generally about a week before it comes on; very rarely under that time.

It often happens that inflammation of the brain does not come on till a fortnight, or even three weeks after the injury; you must therefore be upon your guard, as your patient is not out of danger until that length of time has elapsed, and sometimes, not even then.

8. *Treatment:*—This is the same as for inflammation generally, with this exception only; that blood should be drawn from the temporal artery in adults, and the jugular vein in children. In addition to this rule, you must purge, produce perspiration, and apply blisters to the head.

I have seen poultices, containing some stimulating application, of considerable use.

9. When inflammation terminates in suppuration, the matter may be situated between the dura mater and skull, pia mater and tunica arachnoides, and lastly, in the substance of the brain itself.

10. First:—When pus is situated between the dura

mater and skull, (though this is very seldom the case,) trephining for its removal, would be attended with complete success; but the chances of finding it there are against you, as it is generally situated between the pia mater and surface of the brain, for which an operation would be worse than useless.

11. Secondly:—When matter is situated between the pia mater, and brain itself, it is diffused over the hemispheres of the brain, so that it will be of no use to operate, as very little will be discharged, there being no communication between one part and another; for the matter is contained in distinct cells, between the vessels which come from the pia mater to the brain.

12. Lastly:—Matter may form in various parts of the brain itself, and instead of being attended with symptoms of irritation, they are rather those of compression.

If the membranes of the brain be attacked with violent inflammation, symptoms of irritation will be present; but if the brain itself, they will be those of compression.

TREPHINING.

1. This was formerly an operation requiring several instruments; but as it is now performed, three are quite sufficient; a knife, with a double edge, in order to scrape off the pericranium; an elevator; and a trephine having a crown, and a pin which will allow of being easily moved.

2. In performing this operation, a crucial incision is to be made, and the integuments turned aside; then cut through the pericranium, and scrape it off: apply the trephine (taking care the pin is moved as soon as a circle is made, which in young persons will be requisite very early, because the bone is readily sawn through) and take care you do not injure the dura mater. After you have perforated the skull, the elevator should be introduced, to raise the depressed bone, and in this way return it to its natural situation.

When operating on living subjects, you are informed of the progress you are making, by blood issuing from the wound when you reach the diploe; and when you see the blood, you will know you are half way through: but, recollect, in very young and old persons, there is no diploe; therefore, very few turns of the saw will do. When you find you have sawn through one part, introduce the elevator, and lift the portion of bone, the parts not cut through, being easily broken; and the bone may thus be safely removed without wounding the dura mater.

3. When the dura mater is wounded in this operation, the patient very rarely recovers; but if the dura mater and pia mater are both injured, the danger is less: in the former case there will be excessive inflammation; whereas, in the latter, a fungus immediately projects and fills up the cavity.

The subject under consideration, is one of the most dangerous operations in surgery; whilst performing it, there is but a single step, a small net-work, between your patient and eternity; saw through this, and destruction of life will generally be the consequence.

4. This operation must never be performed where a sinus would be laid open, or, in any other place where an important part would be exposed to injury.

First:—You should never trephine in the course of the longitudinal sinus, or the line that extends from just above the nose, along the top of the head, to the tuberosity of the occiput. Secondly:—Over the frontal sinuses. Thirdly:—Over the anterior inferior angle of the parietal bone, just above the zygoma, on account of the great artery of the dura mater. And lastly:—Behind the ears, on the posterior inferior angle of the same bone, lest you should lay open the great lateral sinus. Fractured portions of these bones may be raised by the elevator; and I may observe here, that this is the instrument chiefly used in cases where the fractures are running in the direction of these parts.

5. The operation of trephining is requisite under the four following circumstances:—First; when there is extravasation of blood between the dura mater and skull:—Secondly; in compound fractures, with depression, unaccompanied with symptoms of compression:—Thirdly; in simple fractures, with depression and symptoms of compression continuing after depletion:—And lastly; it is sometimes required that an opening should be made in the cranium, when there is matter between the dura mater and skull.

Now it generally happens in this last case, where there is matter between the dura mater and skull, that there is fracture, and this is an indication that some injury has been done to the brain, when it is also followed by rigors and other symptoms: still it will be right, in some cases where there is no fracture, and the other symptoms, rigors, &c. are present, to penetrate the bone, to see whether matter is lodged between it and the dura mater; and this is the only case in which it is proper.

WOUNDS OF THE SCALP.

1. Wounds of the scalp are not always devoid of danger, for there are two ways in which they occasionally prove destructive to life; first, by producing erysipelas; and secondly, by producing inflammation of the tendon of the occipito-frontalis.

When inflammation attacks the tendon of the occipito-frontalis, it extends over the scalp and face, and assumes an erysipelatous character, but it is not true erysipelas. It has not the vesicles which commonly attend erysipelas, but it has a tendency rather to suppuration; and if the constitution has the strength to produce this suppuration, it takes place between the tendon and the pericranium. In this way, a very extensive abscess is often formed, into which we are obliged to make an incision, in order to discharge the matter, which cannot make its way through the tendon.

2. Seeing that wounds in the scalp are often attended with considerable hazard, you will be convinced of the impropriety of making incisions in this part, merely for the sake of exploring the nature of an injury.

INJURIES OF THE SPINE.

1. Injuries of the spine produce effects similar to those arising from injuries of the head; the spine being liable to concussion, extravasation, and fracture with depression.

2. Cases of concussion of the spine are not very unfrequent; and most commonly occur in the lumbar region. A violent blow on the loins will produce partial paralysis

of the lower extremities, which in general may be removed by the local extraction of blood.

If at the end of a week or ten days, the paralytic state still continues, you must apply a blister to the loins, and keep it dressed with equal parts of the unguentum lyttæ, and unguentum sabinæ.

3. In cases of considerable extravasation, I do not know what can be done, except to bleed in the first instance, in order to prevent further extravasation; and afterwards to produce absorption, and excite counter irritation by the application of blisters.

4. When fracture with displacement of the spine occurs, paralysis takes place in the parts of the body below the injury. If it occur in the loins, paralysis of the lower extremities follows; the power of retaining the fæces, and of expelling the urine, is lost.

5. When the injury is in the dorsal vertebræ, there are the same symptoms as I have just mentioned, with this addition, that it is accompanied with considerable inflation of the abdomen.

This inflation might lead you, at first, to suppose there was some rupture of the intestines; but after a few hours, when the patient has had free evacuations, this inflated state of the intestines disappears. The inflation is produced by the great secretion of air into the intestines, in consequence of the diminished powers of the part.

6. When the injury occurs in the lower parts of the cervical vertebræ, paralysis takes place in the upper as well as the lower extremities, though not in the same degree.

7. The time in which the person dies from these injuries, varies according to the seat of the accident, as being far or distant from the head.

If it occur in the loins, the patient will generally die in from five to six weeks:—if in the dorsal vertebræ, a much shorter time;—when between the fourth and seventh cervical vertebræ, in four or five days; and if the injury is between the second and fourth cervical vertebræ, the person dies on the instant, because it is above the origin of the phrenic nerve.

8. With respect to the treatment of fracture, with dis-

placement of the spine, nothing hitherto has been effectually done in surgery. The removal of the displaced portion of vertebra has been attempted, but without success.

ANEURISM.

1. Aneurism is a pulsating tumour containing blood, and communicating with the interior of an artery.

There is one exception to this definition, namely, where aneurism, as it sometimes happens, takes place in the heart.

2. Aneurisms are situated either externally or internally.

That is, they are either so situated on the limbs, as that access may be had to them, and the nature of the disease clearly ascertained; or they are so placed in cavities of the body, such as the abdomen, chest, and cranium, as to render the nature of the disease very often extremely doubtful.

3. *External Aneurisms:*—In external aneurisms, the symptoms may be divided into the first, second, and third stages.

4. First:—There is a small tumour, pulsating very strongly, and as it contains only fluid blood, if you apply your finger to the artery between the aneurism and the heart, you will readily empty the aneurismal bag, by pressure.

In this state there is scarcely any pain, and no other alteration in the limb, than some irregularity of circulation, producing spasm in the muscle; and when the patient is going to rest, cramps in the leg, and sudden twitchings which prevent him from sleeping.

5. Second:—In this stage we find the blood is beginning to coagulate in the interior of the sac, the coats of which are very materially thickened.

At this time, if you press on the artery, you may empty the sac in part; you will see the swelling re-produced when you take off the pressure. You cannot completely empty the bag by pressure, for a considerable degree of swelling will still remain. There is some degree of pain below, and the circulation is retarded in consequence

of the pressure on the surrounding parts. The aneurism becomes a solid swelling, instead of a mere bag containing fluid.

6. Third :—When an aneurism reaches its third stage, it has acquired considerable magnitude, and the pulsation is in a degree lost, or seldom perceived over the whole swelling. A small portion of the blood still remains in a fluid state, but the greater part of it is filled with coagulum. Finally, the aneurismal sac bursts, and the patient sinks from repeated hemorrhage or gangrene.

When the third stage has commenced, the swelling gradually increases, and the aneurism becomes of a dark colour; inflammation of the cuticle ensues, vesication of the cutis to the size of half-a-crown, takes place, and the skin in this part is quite insensible. In a few days an eschar is formed, a small wound takes place, and blood issues from the part; lint is applied to the wound, and the hemorrhage is stopped; but as the eschar proceeds, and the size of the wound increases, the hemorrhage returns; and thus by repeated bleedings, destruction of life is produced.

Popliteal aneurism is the most common external one; and is characterized by the symptoms just drawn, as illustrative of external aneurisms. The operation will be found under the 89th paragraph.

7. *Internal Aneurisms :*—The symptoms of these cases will vary according to the seat in which the disease is found; the digestive organs will be in fault at one time, the urinary at another, according to the part on which the aneurismal tumour presses.

8. *Heart :*—An aneurism of the heart consists of a bag formed out of the parietes of that organ, and in this bag an opening is formed, as in aneurisms which take place in arteries.

9. *Ascending Aorta :*—Aneurism of the ascending aorta, just at the commencement, where it is covered by the pericardium, is not of uncommon occurrence.

When they take place between the heart and curvature of the aorta, you find that, after a time, from the pressure of the aneurismal bag, the cartilages of the ribs become absorbed; when the aneurism presses on the lungs, dyspnœa comes on, together with cough, and the complaint is obscure; but at last, the fulness on the right side, and the pulsation to be felt by the pressure of the hand on the intercostal spaces, will enable you to distinguish this disease; then the ribs become absorbed, the aneurism presses against the pectoral muscle, absorption reaches the skin, and the sac bursts by the inflammation of the skin, the destruction of the life of the part, and the separation of the eschar. When hemorrhage has come on in this case, you can protract life for a few days by coating the wound with lint, and endeavouring to form an artificial sac.

10. *Curvature of the Aorta:*—Aneurisms in this part are very frequent, and are to be seen just above the sternum. Termination of existence takes place in different ways.

An aneurism of this kind, often causes, by its pressure, dyspnœa and suffocation; it also often presses behind on the œsophagus, instead of in the front, on the sternum; it will be felt in the back, through the ribs, by the edge of the scapula, between its base and the spine.

11. *Arteria Innominata:*—These cases, in general, do not allow of an operation being performed; there is no room for the ligature.

12. *Descending Aorta:*—When the descending aorta is the subject of aneurism, in its course through the posterior mediastinum, it very often presses on the œsophagus, adhesion of the coat of the sac to the œsophagus takes place, and afterwards an opening between the aneurismal bag and gullet is formed; the patient vomits a considerable quantity of blood, and soon expires.

13. *Abdominal Aorta:*—First, when the aneurism is situated above the cœliac artery, a pulsation may be distinctly felt at the scrobiculus cordis:—Secondly, when it is lower down in the cavity of the abdomen, it often bursts into the intestines:—And in the third case, if the tumour presses on the spine, absorption of the vertebræ takes place.

In the first case you may know the complaint by the aneurismal tumour pressing on the stomach, producing nausea and vomiting, and the immediate ejection of small quantities of food:—In the last case, in addition to what is mentioned in the paragraph, you will also find a large swelling in the loins; but these tumours have no discernible pulsation, owing to their distance from the aorta.

14. *Pelvis, &c:*—Aneurisms form in the cavity of the pelvis, in the ischiatic notch, and under the gluteus maximus muscle; you must, therefore, be on your guard when you find tumours on the nates.

15. *Formation:*—Every aneurism was formerly sup-

osed to be produced by the dilatation of the coats of the rtery; but this is not always the case, for they are generally the fruit of absorption of the internal coats.

First, the artery becomes opaque, and slightly inflamed; a small ellow spot appears in the part where the aneurism is afterwards ormed, and there is a slight efflorescence surrounding it. The rocess of absorption afterwards takes place, and thins the coat of the rtery so that the texture becomes like that of a fine web. At the ame time that this takes place, nature begins to set up a process of efence, a coat of adhesive matter is thrown out, and thus a covering s produced which shuts up the artery, so as to prevent the immediate scape of the blood. As the coat of the artery becomes absorbed, the ellular membrane is glued by this matter to the outer surface of the rtery. The surrounding parts then become absorbed, until there is o longer any thing to prevent destructive hemorrhage.

16. Although aneurisms are generally produced by ab-orption, they are sometimes formed by dilatation, and re now and then the effect of the bursting of an artery.

A pointed body introduced into an artery will produce all the ap-earances of aneurism, *(aneurismal varix,)* and require the same reatment. In short, however aneurism may be produced, the surgical reatment will be the same.

17. The age at which aneurism generally occurs, is rom thirty to fifty; at that age, exercise is considerable nd strength less. Males are more subject to them than emales, and females more subject to internal aneurisms han external.

18. Aneurismal tumours may be known by the pulsation eing perceptible over every part; whereas, in tumours which derive their pulsation from being situated over an rtery, it is only to be felt in the direction of the vessel.

19. Some aneurisms are local, and others general; when they occur in the ham, they are frequently only ocal: but when between the groin and ham, or in the middle of the thigh, you very commonly find disease of other arteries.

A knowledge of this circumstance should lead you to attend to our patient before you operate, lest he may afterwards sink from nternal aneurism.

20. *Treatment:*—Aneurisms sometimes undergo a spontaneous cure; but as this cannot be always depended upon, we will, therefore, now speak of the medical and surgical treatment of these cases.

Spontaneous cures are effected by a bursting of the sac, and the effusion of blood round the artery, causing obliteration of that vessel; they are also caused by the upper part of the sac pressing on the artery, so as to prevent the blood from pressing into the sac.

21. In your medical treatment, do not keep your patients too low, for you will thereby render them very irritable. Bleeding is occasionally useful: strict attention is to be paid to the regimen, and stimulants of every kind carefully avoided.

22. In your surgical treatment, some say, you must have two objects in view: either to attempt the curative process by the application of pressure on the artery, or aneurismal bag, for very small aneurisms, as of the temporal arteries; or, in cases of larger aneurisms, to cut off the supply of blood, by taking up the nourishing artery. From the cases I have witnessed, the plan of pressure on arteries does not succeed, and therefore ought to be abandoned.

23. The general rules to bear in mind in operations for aneurisms are, the manner and direction of your incision; the application of the ligature; and the after-treatment of the patient.

24. The direction and extent of the incision must obviously depend on the situation of the artery about to be operated on.

25. In the operation of taking up vessels, various sorts, and many modes of applying ligatures, have been, at one time or other, in use; but on the whole, rest assured, that the best manner of applying them is that now commonly adopted: tie a tight knot with a fine ligature, and then cut one end close to the vessel, and let the other hang out of the wound.

If in the operation, the artery has been disturbed much from the surrounding cellular membrane, (for an inch or so,) apply two ligatures, and divide the artery in the centre, and there will then be room for the retraction of the artery; but if on the contrary, it has not been much disturbed, apply only the single ligature:—Broad ligatures must, on no account, be used, as they are very likely to produce constitutional irritation, and consequently, cause the parts to suffer for a great length of time.

26. When the operation is completed, you are to bring the integuments close together, by means of adhesive plaster, leaving, however, a small space between each, so that the matter may escape through the interstices: and the other after-treatment must entirely depend on existing circumstances.

If the operation performed, has interrupted the supply of blood to any limb, you must be particularly careful (in cold weather) to preserve warmth, lest gangrene should ensue.

27. The time at which the ligature separates, is generally from the twelfth to the fourteenth day; but it is variable according to the kind of ligature used. If early inflammation comes on, the separation will be rapid; but if there be a broad ligature, and the inflammation indolent, it will be from twenty-five to thirty days.

If the ligature should come away without any hemorrhage, do not consider your patient safe; therefore, be on your guard, and let him remain quiet for two or three days afterwards.

28. We have now taken a general view of the treatment of aneurism; we will, therefore, next proceed to speak of the manner of operating for each individual aneurism.

OPERATIONS FOR ANEURISMS.

29. *External Iliac Artery:*—In taking up this vessel, the points to be observed are, the crescent-form of the incision; the tendon of the external oblique; the internal oblique and transversalis muscles; the spermatic chord; iliac vessels, and other common circumstances attending every operation of the kind.

Begin the incision a little above the abdominal ring, and extend it, in the shape of a crescent, to the edge of Poupart's ligament, and then continue it to about an inch and a half from the inner spine of the ilium, where it terminates. By this incision I lay bare the tendon of the external oblique muscle: In the second, I divide this tendon and expose the internal oblique and transversalis muscles. The next step will be to raise the internal oblique, and transversalis muscles from Poupart's ligament, by introducing the finger behind them; which done, you reach the passage of the spermatic cord; and then behind the pulsation of the iliac vessel. You now draw up the internal oblique, and transversalis muscles with the finger, at the same time elevating the spermatic cord a little, and then carry the finger into the abdomen, behind the peritoneum, and you ascertain the beating of the artery. Having found the artery, I put the aneurismal needle into the opening, and introduce it under the vessel; clear it a little from the surrounding parts, and take it up, carefully avoiding the vein. If the artery should be much exposed (as an inch and a half), two ligatures must be used; but if a small portion only, the single ligature. When you use two ligatures, you will separate them from each other, drawing one upward, and the other downward, and leaving about three-quarters of an inch of the vessel exposed at the extremity of each ligature; for if this is not done, on dividing the artery, there will be danger of the ligatures slipping off. The instrument with which the artery is usually divided, is the probe-pointed bistoury; when it is done, retraction of the vessels immediately takes place. There will be no danger in including the nerve in the ligature, as the anterior crural does not accompany it; the vein and the artery are included in the sheath, and the nerve is on the *outer* side. Lastly, the edges of the wound are to be brought together, and the case treated in the usual way.

30. After the external iliac is tied, the circulation is principally carried on by the gluteal; assisted by the ischiatic, the obturator, and the external pubic.

31. *Internal Iliac Artery:*—The operation of taking up this artery is one of extraordinary difficulty. It is only necessary for an aneurism of the gluteal artery, just at its commencement, so that it cannot be reached under the gluteal muscle.

You make an incision on the inner side of the spine of the ilium, by which you cut through the abdominal muscles, and reach the peritoneum: this you turn to the opposite side, in order that the artery may be reached. In putting your ligature on the vessel, be particularly careful lest you include the ureter, which crosses the internal iliac at the bifurcation, and thus cause the destruction of life. The after management is the same as for aneurisms in general.

32. *Aorta:*—The securing of this artery has been attempted, and from the symptoms and promises of success

which I have observed after the operation, I should feel myself perfectly authorized to attempt it a second time.

In the case I have had an opportunity of giving it a trial, I commenced the incision in the linea alba, two inches above the umbilicus, and carried it to the same distance below, taking care in my descent, to avoid the umbilicus, by giving it a semilunar turn or curve. My finger was easily passed down to the artery, and the vessel secured without difficulty. The principal danger does not appear to be from gangrene, nor is any thing to be apprehended as far as regards the carrying on the circulation, for that will be effected by anastomosing vessels. The danger in part consists in including the nerves in the ligature (which must be cautiously avoided) but more especially from the irritation produced in the intestines by the ligature, and for that reason, if I was ever called upon to repeat the operation, I would cut the ligature close to the vessel, where it should take its chance, either to become encysted or absorbed.

33. *Subclavian Artery:*—There may happen cases of axillary aneurism when the operation below the clavicle would be the best and safest, but unquestionably in ordinary instances, the common mode of securing the vessel above, is the best. After the subclavian has been tied, the circulation is principally supported by the superior scapular.

The operation is as follows:—The middle of your incision should be opposite to the external jugular vein, and the centre of the clavicle; the parts to be exposed are, the omo-hyoideus muscle, crossing obliquely above the clavicle, below the sterno-mostoideus, upon the inner side, and the jugular vein, passing immediately opposite to the centre of the opening. Soon after commencing this operation, you will meet with branches of nerves from the axillary plexus; you must carefully avoid including these in the ligature, for it would be a fatal error if you were to tie them. The scalenus anticus being the boundary of the artery on the inner side, you cut down for the purpose of finding its inner edge; and this you will find a useful guide.

34. *Brachial Artery:*—This artery very seldom requires to be secured in consequence of aneurism; but it is often rendered necessary from other causes, such as wounds, and some of these wounds, indeed, (as in bleeding,) give rise to aneurism.

When an aneurismal tumour at the bend of the arm, has been thus formed, let me recommend you not to cut down upon it in order to secure the vessel; rather tie the brachial artery at the middle of the arm, and not make an incision upon the swelling at the middle of the elbow.

35. In tying the brachial artery, there is only one cir-

circumstance of any importance to bear in mind, and it is this: the vessel is accompanied by the median nerve: now, if you should include this in the ligature, it would either destroy the patient's life, or cause paralysis of the limb.

When you are about to secure this artery, the direction for the incision is the inner edge of the biceps muscle, and this cut almost immediately lays bare the median nerve.

36. *Ulnar Artery:*—Make your incision upon the inner side of the tendon of the flexor carpi ulnaris, and you will directly perceive the ulnar artery and ulnar nerve.

37. *Radial Artery:*—Let your incision be made on the radial side of the tendon of the flexor carpi radialis, and you will immediately find the artery close to the edge.

Instead of putting ligatures upon these vessels at the wrist, or wounds of the palmer arch, it has been recommended to employ pressure, by means of cork, folded in lint, and bound down by a bandage; but it is a practice which leads to great irritation and inflammation.

38. *Carotid Artery:*—In the operation of securing this artery, it is desirable to make the incision as high as you can; the upper boundary, therefore, will be the angle of the jaw, and below the omo-hyoideus. Make your incision first, then high up, on the inner side of the sterno-cludo-masteideus, upon drawing aside the edge of which, you will distinctly see the omo-hyoideus obliquely crossing the artery. In passing the ligature round the artery, if you raise it a little, you can readily discover whether the par vagum is in contact with it, and thus guard against an accident which might lead to a fatal result.

39. *Femoral Artery:*—For the cure of popliteal aneurism, this artery was first secured in the middle of the thigh, by Mr. Hunter, and is the operation now generally practised.

Operation:—Put the sartorius muscle in action by placing the leg in the tailor's position; then make an incision three inches in length, rather above the middle of the thigh, in the oblique direction of the muscle, and on its inner edge; continue it through the integuments and fat, till the border of the muscle is exposed. Observe the direction of the fibres, to ascertain that you have not come upon the vastus,

then elevate the sartorius, draw it a little outward, which brings the femoral sheath into view; open this with care by a small incision, and then dilate it, but cutting from within, *outwards:* this exposes the artery, which has the vein rather behind, and to its *outer* side. When the artery is secured, you are to bring the integuments close together by means of strips of adhesive plaster, having a small space between each, for the escape of matter. No bandage or roller should be applied; and as for the position of the limb, it should be placed on a pillow, and on its outer side, occasionally changing it so as to prevent pressure in any particular part.

It not unfrequently occurs, when there is aneurism of the popliteal artery, there will also be aneurism of the ascending aorta, therefore, in such cases, and in fact always before operating for any aneurism, examine the patient, and see if there is pain and pulsation in any other part, as death may take place by the rupture of an internal aneurism, whilst you are performing it.

40. When the femoral artery has been tied, the circulation is carried on by the arteria profunda; from this anastomosing vessels are sent off, which communicate with branches from the anterior tibial.

41. *Anterior and Posterior Tibial Arteries:*—The operation which has been described for popliteal aneurism, is the one used for aneurisms situated at the upper part of these vessels; but the operation is not to be performed when the aneurism is near the foot, for in such cases, you must make an incision on the sac, and apply a ligature both above and below the aneurism.

42. *Arteries of the Scalp:*—In these cases, if the aneurismal bag is not very large, you may cut immediately across it; apply a piece of doubled lint, then adhesive plaster, and over the whole a roller. If the swelling is small, (not larger than a walnut,) you should make a circular incision completely down to the occipito-frontalis tendon.

In this manner, the connection between the blood-vessels and the aneurism is destroyed; and, by applying a dossil of lint, and strips of adhesive plaster, you speedily succeed in getting rid of the disease.

HYDROCELE.

1. Hydrocele is an accumulation of water in the tunica vaginalis testis, and not between the tunica albuginea and the tunica vaginalis, as was formerly suspected.

2. Hydrocele may be of two kinds: first, of the tunica vaginalis; and the second, of the spermatic cord.

3. *Tunica Vaginalis:*—The swelling in hydrocele of the tunica vaginalis, at first shows itself at the lower part of the scrotum, and gradually rises till it arrives at the abdominal ring; is of a pyriform shape; largest two-thirds of the way downwards; a little less at the bottom; and smallest at the ring.

The common formation of hydrocele is unattended with pain, excepting however, in those cases, where it has been the result of inflammation; but generally speaking there is no pain, and the patient accidentally discovers the existence of the swelling, and often not until it has arrived at considerable magnitude. Commonly there is no redness of the scrotum and no discoloration.

4. The ordinary situation of the testicle in hydrocele, is two-thirds of the way down the tumour, at the posterior part; but in this respect it sometimes varies.

The testicle is sometimes found in the front; sometimes at the bottom, and at other times attached to both the anterior and posterior surfaces. These varieties are depending upon adhesion from inflammation before the collection of fluid.

5. The diagnostic marks of this disease are, its sense of fluctuation, its transparency, lightness, form, freeness, from pain, and the history of the case.

Diseased testicle may be easily distinguished from hydrocele, by its weight and flatness, and the pain and sickness which it occasions; and from hæmatocele or a collection of blood, by the history of the case, and its immediately following the receipt of an injury.

In very old cases of hydrocele, and in persons who have long resided in hot climates, the tunica vaginalis is much thickened, so that there occasionally is great difficulty in detecting the transparency of the tumour.

6. The contents of hydrocele is usually yellow serum; which gradually rises from the bottom of the tumour till it arrives at the abdominal ring; but this, however, is not always the case.

Sometimes the water of hydrocele forms two swellings, one above the ring, and the other below, thus giving cause for the surgeon to suspect hernia, and although the upper part dilates upon coughing, from the action of the abdominal muscles, its transparency and lightness will readily distinguish the complaint. There are also other variations in the disposition of the fluid in hydrocele.

7. *Congenital Hydrocele:*—In addition to hydrocele of the tunica vaginalis and spermatic cord, there is another variety, called the congenital hydrocele. It is in consequence of a communication having from birth existed between the tunica vaginalis and cavity of the abdomen.

When the parts are natural and perfect, there is no opening leading from one to the other, as you know; but occasionally the natural closure does not take place, and then a fluid may descend from the abdomen, and collect in the tunica vaginalis.

8. Congenital hydrocele may be readily discovered from any other, in consequence of your being enabled, with ease, to return the water into the cavity of the abdomen, by placing the person upon his back, and then elevating the scrotum.

In these cases, I would recommend you to have a truss worn over the ring, until you have succeeded (by adhesion of the parts) in destroying the communication; and if the health is good, the water will become absorbed, and an operation unnecessary.

9. *Cause:*—The cause of hydrocele appears to depend upon increased secretion, as the vessels are dilated, though there is generally no inflammatory action.

Inflammation of the testicle will give rise to hydrocele; for as the inflammation disappears, hydrocele forms. This can generally be removed by exciting absorption; for which purpose, give Plummer's pills, and apply to the scrotum a lotion composed of the solution of acetate of ammonia, and muriate of ammonia. These means will be found to have considerable influence in hydrocele which results from Inflammation, but in the other sort, they have none.

10. *Treatment:*—Hydrocele, if left to itself, will often

undergo spontaneous cure; but we are frequently called upon to use a palliative treatment, by drawing the water off, and in some cases, a radical or curative treatment, by the after-use of stimulating injections or other means.

When persons are afraid of the curative treatment, or when it would be attended with inconvenience, as also in old persons, the palliative will be demanded; and insignificant as it may appear, it has been known to cause the destruction of life; I would therefore advise you, whenever you perform this operation on old persons, to make them keep their beds for a few days afterwards.

11. In performing the operation, a trocar and canula are all that is necessary;—whether you perform it for the palliative or curative treatment, remember that the testicle is usually two-thirds of the way downwards at the posterior part; introduce the trocar in the fore part *obliquely upwards*, indeed almost perpendicularly, to avoid wounding the testicle; withdraw the trocar the instant you believe that the canula is within the tunica vaginalis; and once having the trocar in, take care to keep it there until the operation is concluded, by grasping the tumour at the posterior part, so as to keep it tense where the trocar entered.

If you wish to accomplish this operation bloodlessly, to prevent internal bleeding, and the formation of hæmatocele, keep the patient at the time you are doing it, in the erect position. There is no necessity for any after application; on the following day, the wound will be well.

12. The palliative treatment is required to be repeated in proportion to the dropsical tendency existing in the person.

In some it will be necessary once a month; in others, once in three months; but generally speaking, the usual time is every six months.

13. The radical cure of hydrocele is effected in three ways:—First, by absorption; secondly, by adhesion; and thirdly, by granulation.

When hydrocele is produced in the common way, medicine or local applications have hardly any influence upon it; and when it arises from a relaxed state of the vessels, neither stimulants nor blisters will be of use.

14. In young persons and children you should not

always perform the operation; but endeavour to occasion absorption of the fluid, by suspending the scrotum, and he use of internal and external stimulating remedies.

Calomel, scammony, and rhubarb, may be given internally; and the scrotum held in a suspensory bag, fastened by a tape round the abdomen, just below the umbilicus, and kept constantly wet by a stimulating lotion of muriate of ammonia with the solution of acetate of ammonia.

15. When cases of hydrocele do not yield to absorption, or are too far advanced to attempt it, your next resource is to endeavour a cure by the adhesion of the unica vaginalis, and thus prevent the future collection of fluid. This is effected in three ways, either by a seton, ncision, or by injection.

16. Setons are very rarely used; but in young persons whose hydroceles do not give way to the absorbent plan before mentioned, rather than inject, use the seton; the thread should be allowed to remain for ten or fourteen days, till inflammation and the adhesive process is set up.

Operation:—Take a curved needle, armed with thread, and carry it into the tunica vaginalis and scrotum, just at the point where the trocar had been previously introduced, and include two inches above the point, where the needle enters, and bring it out sufficiently long; inflammation will generally ensue, and adhesion of the tunica vaginalis come on.

17. If there is any suspicion of a disease of the testicle, you may use the incision, (except in old persons,) and when the opening is made, sprinkle some meal or flour into the wound, to prevent immediate adhesion, and promote granulation.

18. The operation more generally required for the radical cure of hydrocele, is that of injection. After the water has been drawn off in the usual manner, and the canula still left in, you are to force into the scrotum, by means of an elastic bottle, a stimulating fluid, for the promotion of adhesive inflammation.

When you inject for hydrocele, you should place the patient in the recumbent posture. Before you introduce the trocar and canula, make it a rule to squeeze the scrotum and tunica vaginalis, so as to make the part where the fluid is most distinct, very tense; then introduce them obliquely in the same manner as in the palliative treatment. Having passed the trocar and canula into the tunica vaginalis, withdraw the trocar, and push the canula alone carefully *upwards*, so as to prevent any injury to the testicles or spermatic cord. You should nip the tunica vaginalis round the canula, to guard against the instrument being diverted, and thus throwing a portion of the fluid into the cellular tissue, thereby leading to destruction of life. Having taken this precaution, you are gradually to throw up the injection, turn the stop cock, so as to confine it in the tunica vaginalis, and move the scrotum from side to side, so that the fluid may reach every part of the surface. It should be suffered to remain in for four or five minutes.

The elastic bottle should be of a moderate size, and be furnished with a stop cock, and only half the quantity of fluid contained in it should be thrown in at a time, lest the action of the cremaster muscle should force a part of it into the cellular tissue. If this happens, inflammation and sloughing may take place around the part at which the canula is introduced.

19. The fluid used for injection should be of a stimulating kind. If you use port wine, the proportion of wine and water should be half and half; but the best injection you can use, is the sulphate of zinc, in the proportion of one drachm to a pint of water, as you can always depend upon the degree of strength.

While the injection remains in the tunica vaginalis, the patient will complain of a good deal of pain; he will first feel as if the testicle were squeezed; he will then feel the pain running along the course of the spermatic cord at the spinal process of the ilium, and at the loins, where the spermatic plexus of nerves arises; and lastly, at the neck of the bladder in the course of the vas deferens.

20. The pain from the injection will be greater or less in proportion to the irritability of the patient; and it may generally be observed, that the degree of subsequent inflammation is in the inverse ratio of the pain suffered at the time.

If little pain is experienced, a considerable degree of inflammation will follow; while on the contrary, where much pain is felt, it is generally the effect of nervous irritability, and little inflammation follows it.

21. It sometimes happens, in constitutions which have a great disposition to inflammation, that the injection will act so violently as to produce suppuration.

When there is danger of this, which you may ascertain by the great pain and redness of the scrotum, make an incision with the

lancet into the part, and discharge the contents, and if the opening is not large, the cure will be effected by the adhesive process.

22. When the fluid has been suffered to remain in the usual time, withdraw the instrument, and there will be no occasion for any application to the part. After a few hours have elapsed, inflammation will probably come on.

Let your patient walk about as usual in the course of the day, if he feels but little pain: if much, tell him to lie down, take his dinner that day, and his glass of wine after it, if he has been in the habit of doing so. Should inflammation not come on from your remedies, you must take the part in your hand, and touch it here and there until the patient feels a good deal of pain. Then desire him to take a long walk, and an additional quantity of wine and water.

23. *Spermatic Cord:*—Hydrocele of the spermatic cord may be defined as a collection of water, which takes place in the tunica vaginalis, between the testicle and abdominal ring.

Sometimes the fluid extends above the ring, giving rise to the idea of its being inguinal hernia; but you may judge of the nature of the umour by its blue and semi-transparent appearance, by its being ntirely unattended with pain, and by its not running into the abdomen, like inguinal hernia.

24. The best mode of treating this disease, is to make n incision in the tumour; introduce your finger into the ac, so as to ascertain that there is no communication with the abdomen, and then introduce a small quantity of our to promote a slight internal irritation.

Injections in this situation would be attended with difficulty and anger; and in the above manner you may readily effect a cure.

HERNIA.

1. Hernia is a generic term, and is used to signify the rotrusion of any viscus from its natural cavity; as of the bdomen, chest, &c.

Surgeons generally confine it to protrusions of the viscera from the avity of the abdomen, as they are of the most frequent occurrence, and arise from the bulk of the parts contained in the abdomen, and the relaxation of its parietes.

2. There are four species of abdominal hernia, of which I shall here treat; the inguinal, the femoral, the umbilical, and the ventral; but besides these four, several others occasionally occur.

3. The circumstances connected with the reducible, irreducible, strangulated state, and after-treatment of all abdominal herniæ, may be referred to what will be found under the various paragraphs upon inguinal hernia.

INGUINAL HERNIA.

1. Inguinal hernia, called sometimes spermatocele, takes the course of the spermatic chord. It varies a little in different cases, but generally follows the course.

2. There are four kinds of inguinal hernia; the oblique, the direct, the congenital, and the encysted.

OBLIQUE INGUINAL HERNIA.

3. This kind takes the course of the spermatic cord; it begins with the cord just as it passes out of the abdomen, and follows the direction of the inguinal canal; its course is oblique, and on this account it is so called.

Oblique inguinal hernia begins to protrude half way between the anterior superior spinous process of the ilium and the symphisis pubis; in the spot directly anterior to the iliac artery, about an inch and half from the lower abdominal ring, opposite to the tendons of the internal oblique and transversalis muscles, where it will be important to bear in mind that stricture most frequently occurs, and not at the abdominal ring, as some surgeons have said, though in old herniæ, the seat of the stricture may be at this part. When the hernia has protruded through the fascia transversalis, the epigastric artery is always on the *inner* side of the hernial sac; therefore, by dividing the stricture directly *upwards*, or upwards and outwards, you would be quite safe of this vessel. The spermatic artery is situated at the

origin of the hernial sac, and could only be injured by cutting downwards. After the hernia has protruded through the fascia transversalis, it is situated in the Inguinal canal; the next place where it reaches, is just under the arch formed by the tendon of the internal oblique and transversalis muscles; and here it receives a covering from the cremaster; above the sac there are the internal oblique and transversalis, and beneath it the fascia transversalis. Having passed through the inguinal canal, (which may be two or two inches and a half long,) it reaches the lower abdominal ring, and at this part the hernial sac will have *two* coverings, one from the cremaster, and another from the fascia spermatica.

4. With respect to the parts about the hernial sac, the spermatic cord is behind, the testicle below, the internal oblique and transversalis above it, and the fascia transversalis beneath it.

It is generally thought that the hernial sac is an elongation of the peritonæum; but in the oblique inguinal hernia it is not an elongation, but only a real growth of that part.

5. Inguinal hernia is subject to several varieties; in size, contents, and disposition of the parts.

With respect to the contents, it will, at one time, contain intestine, at another omentum; and here let me observe that intestines will be generally found in the hernia of children, and that omentum is very rarely to be met with in the very young.

6. *Diagnosis*:—The distinctive marks which characterize the hernial tumour, are, its dilation and expansion on coughing; the capability, when in an horizontal posture, of being returned into the abdomen; its again appearing upon resuming an erect position; and, in scrotal hernia, its first appearing in the groin, and thence descending into the scrotum.

First:—Inguinal hernia, when it has become scrotal, may be known from *hydrocele*, by the latter beginning at the lower part of the scrotum, and thence gradually ascending to the abdominal ring; by the fluctuation and transparency in the one, by the absence of these symptoms in the hernia. In hernia, the testicle may generally be distinctly felt below the tumour; in hydrocele, it is involved in the substance of the swelling, and cannot easily be felt. Hydrocele, until it has increased to a great size, is not dilated upon coughing. Hydrocele and hernia sometimes occur together; the hydrocele on the fore part, and the hernia behind. Secondly:—There is some difficulty in distinguishing *hydrocele of the spermatic cord* from hernia; but the transparency of the former, and its beginning at the lower part of the scrotum, are in general its characteristic marks. Lastly :—Hernia may also be confounded with *varicocele*, for in this complaint, all the marks of reducible hernia are present. You may thus distinguish them :—Tell the patient to lie down, raise the testicles, and empty the veins; then press firmly on the abdominal ring; keep your finger there, and raise the patient from the recumbent posture, and the swelling will return. On the contrary, if it be hernia, the tumour cannot re-appear until the finger is removed.

7. *Causes of Inguinal Hernia* are three in number ;—First, unusual pressure of the abdominal viscera ; secondly, pressure of the parietes of the abdomen ; and lastly, relaxation.

So that the predisposing causes are, debility, however induced, producing relaxation of the muscles and their tendons ; and malformation of the parts. And the exciting causes, are accidental blows ; great muscular exertion ; pressure from obesity, or the wearing of tight clothes; pregnancy ; any forcible agitation of the body, as jumping, violent riding, &c.

REDUCIBLE INGUINAL HERNIA.

8. After a reduction of the tumour, (which in this state can be readily effected by the patient himself,) the universal mode of preventing its return, is the wearing a truss ; the pad of which, by its constant pressure, when applied to the mouth of the sac, occasions an adhesion to take place between its sides, and thus a cure is obtained.

Various kinds of trusses have been invented at different periods; but the common truss in general answers the purpose extremely well; it does not require an understrap ; and it has this advantage, that it may be worn in the night as well as during the day. The mode of applying it is merely to place it on the side of the hernia, and bring it round the body ; and if you use an understrap, this should be brought between the thighs.

9. A patient should wear his truss at least two years ; but whether he will, at the end of that time, be perfectly cured, will depend upon his age. A young person is generally cured in that time, but it is advisable to continue the truss for three years. If the person is not young, there is not much hope of effecting a cure by wearing a truss.

When a truss has been worn for some time, the effect upon the hernial sac is, that it falls into folds by the action of the cremaster, resembling the appearance of the stomach after death, when it has undergone contraction. Sometimes water forms beneath the adhering part, producing hydrocele of a particular kind. The fluid in this case is clear as water, and has not the common character of serum.

10. The danger of hernia is in proportion to the smallness of its size.

If the hernia is large, it is more readily returned into the abdomen; it is rarely strangulated; and if strangulated, it is more easily reducible. If on the contrary, the hernia is very small, the ring through which it passes being extremely narrow, the protruded parts are very tightly embraced, the hernia is very liable to strangulation, and in this state is rarely reducible.

IRREDUCIBLE INGUINAL HERNIA.

11. Hernia becomes irreducible from various causes; the most common cause is, the adhesion of the omentum or intestine to the interior of the hernial bag.

A second cause is the growth of omentum or mesentery, without adhesion, from the accumulation of adeps, which renders it impossible to return the hernia. A third cause is the formation of a membranous band, produced by inflammation across the sac, by which the omentum and intestine become entangled, and the return of the protruded part is prevented.

12. *Treatment:*—In irreducible scrotal hernia, advise your patient to wear a simple suspensory bandage, without which he would be exposed to considerable danger, from the possibility of the hernia bursting, if he should receive a blow on the part.

A patient with irreducible hernia, is always exposed to considerable danger from blows which he may receive. If the hernia burst, the intestine may be returned into the omentum; but the omentum, in general, cannot be returned. If a truss be worn in irreducible hernia, the spring should be very slight, so as to occasion no pain, otherwise there will be danger of strangulation.

13. When inguinal hernia is rendered irreducible by the growth of mesentery or omentum, there is no doubt

that a patient may be relieved by abstinence in diet, and by taking such means as are calculated to reduce the bulk.

If the hernia is irreducible, in consequence of the formation of a membranous bag across the sac, you cannot depend upon any plan to effect its reduction. Long continued application of cold is sometimes used with benefit.

14. In those cases in which the hernia is very large and irreducible, the best plan is to advise the patient to wear a laced suspensory bag, which by its pressure on the scrotum will not only prevent the hernia from increasing, but will diminish its size by absorption.

In this manner, a bulky hernia may be rendered much less inconvenient to the patient. With respect to wearing a truss in this state of hernia, if the patient should feel any pain, it will not be advisable.

STRANGULATED INGUINAL HERNIA.

15. A hernia is said to be strangulated, when it is not only confined within the parts into which it has descended, but when it is so much compressed by the narrow part through which it has passed, that the circulation, (in the intestine and omentum which has descended) is in a great degree stopped.

Some portion of blood is still capable of being carried to the part by the arteries, but it cannot be returned by the veins.

16. *Symptoms:*—The patient first complains of pain about the region of the diaphragm, as if a cord was bound tightly round the upper part of the stomach; frequent eructations follow; vomiting of a bilious, and sometimes of a feculent matter; obstinate constipation; quick, hard pulse. The tumour is red, painful, and œdematous; the abdomen becomes sore and painful to the touch; a profuse perspiration breaks out over the body; the pulse becomes small and thready; troublesome hiccups; remarkable expression of anxiety in the countenance.

These symptoms often undergo a remission, but return again with increased violence; and if reduction is not speedily effected, a mortification of the intestines takes place, when the patient, after suf-

fering intolerable pain, becomes suddenly easy; the tumour assumes a purple, or leaden colour, and, from being tense and elastic, becomes soft and doughy, and has an emphysematous feel; the abdomen becomes more tense; the hiccup more severe; the body is covered with a cold clammy sweat; the eyes have a glassy appearance, the pulse is irregular, though softer and fuller; the patient is tranquil and sensible to the last, and often expires with the delusive hope of recovery.

17. *The Seat of Stricture:*—Is commonly opposite the tendon of the transversalis muscle, which circumstance is often produced in consequence of the thickening of the hernial sac, from the pressure of a truss. Sometimes the stricture is an inch above the abdominal ring. At others, when the hernia is old and large, at the ring. But when the hernia is recent and very small, the stricture is often two inches above the ring.

It is owing to this last circumstance, that the finger is often lost in oblique inguinal hernia, before the stricture can be felt, so far above the ring is it situated. Sometimes the finger feels the stricture an inch above the ring, at others an inch and a half, or even two inches; and in each of these situations, it is very common. The stricture is sometimes found at the neck of the hernial sac, in consequence of a membranous band crossing it at that part. And another cause of stricture arises from a portion of intestine being occasionally entangled in a part of the omentum.

18. *Cause:*—An additional portion of intestine, though it consists only of a single volume, brings down with it a portion of mesentery, which, added to the piece of intestine previously descended, so completely occupies the space of the opening as to produce the symptoms of strangulation.

It is not sufficient, in giving the cause of strangulation in intestinal hernia, to say that a portion of intestine has descended into the sac; because it often happens that strangulation is produced, although only a single convolution has descended, and this convolution being elongated, does not occupy any additional space in the mouth of the sac.

18. *Treatment:*—As there is no safety, but in returning the intestine into the cavity of the abdomen, it must be your first object, except in one or two cases, hereafter to be mentioned. In order to return the hernia, you are to employ what is termed the *taxis*.

20. The taxis is a particular kind of pressure on the hernia, which is to be performed in the following manner:—Embrace the lower part of the hernia in your hand, elevate it gently, and push it towards the abdominal ring; having done this with one hand, you are to put the finger and thumb of the other on the part just above the ring, and knead it gently by a successive motion of the finger and thumb, until you at last obtain a passage for a small portion of the intestine or omentum through the strictured part, into the abdomen.

When, by this process, you have gradually insinuated a small portion of intestine into the abdomen, it generally happens that the rest will follow, accompanied with a peculiar gurgling noise, and the hernia will consequently be returned. It is no use to make pressure on the hernia, with a view of emptying the intestines of their contents.

21. The time in which hernia is returned by the process of the taxis, is generally from ten to fifteen minutes. Do not attempt to perform it at once; proceed gently and gradually, and never press with any considerable force on the lower part of the swelling, lest you burst the intestine. If it does not answer after a fair trial, do not continue to repeat it, for it is not only useless, but often renders all other means, which may be subsequently employed, unavailing.

It now and then happens, that a person is so extremely sensitive, and resists the employment of the taxis with so much violence, that it will be impossible to persevere, for a time, at least, in its use. In these cases, therefore, do not employ the taxis immediately, but advise the application of ice, which will reduce the irritability of the part, and perhaps render its employment unnecessary.

22. If the use of the taxis does not succeed, you must then immediately abstract blood in proportion to the age and constitution of the patient.

If the person is young and athletic, a considerable quantity should be taken away; if on the other hand, he is extremely old, you should hesitate in taking away much; but if he is of the middle age, and not infirm, you should bleed freely, until fainting is produced, and then apply the taxis. This course is to be taken, not merely with a view of reducing the hernia, but to prevent peritoneal inflammation after the operation, if the operation should be thought necessary.

23. The warm bath, from 90 to 100°, and the patient

kept in until fainting is produced, also affords another more favourable period of employing the taxis.

The taxis should be used while he is in the bath; or he must be taken out and wrapt in flannels, to preserve the faintness, and the remedy employed under such circumstances.

24. Cold applications, as ice, are sometimes used with considerable benefit; and indeed, if you wish to have time to consult on the case, it will retard the progress of inflammation most effectually.

Ice or snow should be used when they can be procured; these should be put into a bladder (half filled,) and the part completely enveloped in it; if it is put in linen, there is danger of some escaping, and destroying the life of the parts on which it goes. As a substitute for ice, a mixture of about half a table-spoonful each of muriate of ammonia and nitrate of potash, dissolved in a pint of water, will produce a degree of cold equal to 26° Fahr.; or a greater degree of cold than this, may be obtained by the addition of more of the salts, as low as 20° Fahr.

25. Another remedy that has been used, and the most successful of all, is the *Tobacco Enema;* it is the most powerful agent we have; it quickens the pulse, and also makes it small; the skin becomes cold and pallid, and there is extreme relaxation of the muscles.

Take one drachm of tobacco, and add a pint of boiling water, let the infusion remain about a quarter of an hour, and then strain; use only half an ounce, to begin with, for though some persons might bear the whole, and even more, yet there are others who cannot bear the least thing.

26. The effects of the tobacco enema in hernia, depends much upon whether the hernia is situated near muscle or tendon; if it is surrounded by the former, as in umbilical and inguinal, its effects will be considerable; but if by tendon or bone, as in femoral hernia, but slight.

27. *Operation:*—Before I would submit my patient to the danger of an operation, to recapitulate what I have already said, I would have the taxis employed steadily for ten or fifteen minutes; if this did not answer, I would bleed to syncope, and then have the reduction by the hand attempted again; if this also proved unsuccessful, I should

use the tobacco enema, and wait a short time; and then, if necessary, have the operation performed.

Do not defer the operation too long; but let it be done before there is any peritoneal tenderness. In a boy, you should wait but for a very short time, after you have used the other means; but in an older person, you may stop longer, because the parts are generally more relaxed.

28. Having used the means, which have been recommended, without success, you will then proceed to the operation.

The patient should be placed on a table from two to three feet high, with the legs hanging over the end; the hair having been removed from the pubes, you should commence the incision from the upper part of the tumour, in whatever situation it may be, and carry it along its middle to the lower part. There will be no necessity to continue the incision quite to the lower part, if the hernia is large, as then it often happens that there are vessels crossing in that part. By the first incision, you lay bare the fascia of the cord, and in doing this you will divide a small artery, the external pudendal, which crosses directly opposite to the abdominal ring; take your tenaculum, and secure the two ends of the bleeding vessel, and then scratch through the fascia of the cord, just below the ring, with considerable care, separating it from the cremaster muscle; a small opening being made, you introduce a director upwards to the abdominal ring, and inferiorly to the lower part of the swelling, and divide the fascia more or less, as may be required. The next parts that will be brought into view, are the fibres of the cremaster muscle, passing obliquely from above, downwards; this covering is of considerable density, and must be opened with care: a director is to be introduced under it, in the same manner as the fascia of the cord, and then it is to be divided; as soon as this is done, the hernial sac becomes exposed; it is of a blue appearance, and semi-transparent from the fluid it contains. Having laid bare the sac, you pinch it between your fingers, and feel distinctly the intestine and omentum within it; in rubbing the sac between the fingers, do not use any force, as this is exceedingly dangerous. When you have raised the sac so as to separate it from its contents, take the knife and make a small cut into it, not downwards, but in a lateral direction; place the instrument horizontally, so as to avoid the danger of wounding the intestine, a danger to which you would be exposed if you cut downwards. As soon as an opening is made, water generally escapes, if intestine be included in the sac, and there are no adhesions. Having opened the hernial sac, a director is to be introduced as far as the abdominal ring, and then it is to be divided up to that extent; the director is then to be carried to the lower part of the sac in the same manner. When both omentum and intestine are in the sac, the omentum will be found before, and intestine behind; there will also be a small portion of omentum at the upper part. After having opened the hernial sac, the great difficulty commences; you are next to feel for the stricture; put your little finger into the hernial sac, and ascertain if the stricture is situated at the abdominal ring; and if so, spread the omentum on the fore part of the intestine

like an apron, so as to cover it entirely; by this plan, the intestine is less liable to be wounded, and it adds exceedingly to the security of the patient; and then you pass a probe-pointed bistoury, guided on the finger, and divide the stricture, not very freely, but to a small extent; a slight motion of the knife will do.

The stricture, however, does not generally exist at the external ring, for it is usually situated at the upper part of the hernia, just opposite to the tendon of the transversalis muscle, or else in the hernial sac itself; and what you have to do is to slit up the abdominal ring, to hook up the abdominal muscles, and draw them upwards towards the abdomen; then to pull down the hernial sac; by this means you expose the stricture, and render the operation more safe to the patient. The probe-pointed histoury is blunt to the extent of a quarter of an inch, sharp for half an inch, and then blunt again, so that you may introduce it on the director and finger, and divide the stricture without fear of cutting too much. You must divide the stricture in the centre, and cut *directly upwards*, let the hernia be where it may, and you will be in no danger of wounding the epigastric artery. The stricture being divided, you next return the intestine before the omentum. You should always, at this stage, introduce a finger, to see whether the parts are freely returned or not, and are not compressed at the place where the stricture was situated. If there is any air in the intestines projecting above the stricture, bring it down into the lower part, and by this means they will be more easily returned. The intestines should be returned piece-meal to the cavity of the abdomen, and then the omentum should succeed it.

29. We have now gone through the primary steps of the operation; but there are two very important points to be considered,—the treatment of the intestine, and of the omentum,—before we give the conclusion.

30. *Intestine:*—Sometimes the intestine adheres to the sac; if the adhesions be slight, break them down with the finger, or divide them very cautiously with the knife. If they are general and strong, the best plan will be completely to divide the stricture, so as to reduce the strangulation, and leave the intestine in an irreducible state.

An irreducible hernia is not dangerous, provided there is no strangulation.

31. When strangulation has gone on to gangrene of the intestine, it will be found of a deep brown or chocolate colour, covered with a layer of brown coagulated lymph, fetid, and interspersed with purple or leaden-coloured spots, which readily break down under the impression of the finger.

In such cases, the following treatment is recommended :—If a small portion only of the cylinder is diseased, a ligature is to be passed through the attached mesentery, at right angles with the intestine, and then through the hernial sac; when, by this means, the intestine becomes confined to the aperture, adhesions form, and an artificial anus is produced. The opening has, however, in some instances, after a time, closed; and the fæces have resumed their natural course; but when the whole cylinder is mortified, the diseased part should be cut away; the divided ends brought together, and united by means of four ligatures, inserted around the intestine.

32. *Omentum* :—If the quantity of omentum be small, and little changed in character, you must return it to the mouth of the hernial sac, so as to seal up the opening; but when there is much, your treatment must be somewhat different.

When there is a great descent of omentum, it is not thin and fine as in its natural state, but the different layers unite and form a solid mass. In such cases, you must remove a large part by the knife, and return the remainder to the mouth of the sac to plug up the opening. After cutting the omentum, numerous vessels will frequently bleed, these should be drawn out with a small pair of forceps, and lacerated. If the vessels continue to bleed, ligatures should be applied, and care taken no omentum is included. The ligatures must be let to hang out of the hernial sac, and in three or four days they will separate.

33. When the omentum adheres to the internal part of the hernial sac, considerable freedom may be used in destroying the adhesions; but I would not advise the use of the knife; just tear through those first in front with the finger, and then spread the liberated omentum out, and lastly tear through the adhesions which confine the omentum to the back of the sac; ligatures must be applied to the bleeding vessels.

When the adhesions are torn through, and the vessels secured, the omentum must be returned as before mentioned. Take care all the vessels are secured, and that hemorrhage has entirely ceased; else when the omentum is returned, the warmth will bring on the bleeding.

34. When the omentum is in a gangrenous state, it will be known by the blood coagulating in the veins. The treatment always adopted is to cut away the omentum close to the mouth of the hernial bag, and leave the remainder to plug up the opening; the vessels must be secured.

Omentum in a state of gangrene, has nothing of the blue appearance seen on gangrenous surfaces, nor any of the green spots to be found on the intestine in a similar state; and if the fingers are passed along the surface, there is a crispy feel.

35. *Treatment after operating:*—After the operation for strangulated hernia, there are two things from which danger is to be apprehended; the first, that the intestines may not perform their office, and the fæces not pass in their natural course; secondly and principally, that peritoneal inflammation may come on, and produce the same effects as if gangrene were present.

The object consequently should be, as soon as the hernia is returned, to close the wound as completely as possible, by means of sutures, and to employ gentle pressure. But if the hernial sac remains open, the integuments should be brought together by means of sutures, slight pressure should be made by dossils of lint, and the parts should be supported in a suspensory bandage.

36. The horizontal posture must be strictly ordered; and in five or six hours after the operation, give a little sulphate of magnesia or castor oil; the more motions your patient has, the better.

You must not imagine because your patient has two or three motions in the twenty-four hours after the operation, that he will do well: for this is generally the case; you must therefore keep up a free discharge from the bowels, or the next day you will find them bound, the abdomen tense, and tender to the touch, and vomiting will come on. He is at this time in the greatest danger; you must bleed largely and purge him freely by medicines or injections.

37. Hiccup will sometimes take place; it is not the result of gangrene, but of inflammation of the intestine, or of the peritonæum.

Hiccup under these circumstances, should be treated by bleeding and purgatives; and these means aided by opium.

38. The operation for strangulated hernia does not prevent the future descent of the intestine; but the application of a truss early, prevents it from being so large.

The patient, as we have already observed, should be kept in bed for some time after the operation, and good granulations be produced. Dossils of lint should be applied, and a truss, so as to make pressure, and close the upper part of the sac. Never let the patient rise from bed without a truss to press on the sides of the sac.

OPERATION FOR LARGE HERNIÆ.

39. Herniæ of a large size require a very different operation from that we have just gone through.

In those cases in which I have operated, I have made an incision to the extent of three inches in the upper part of the hernia, an inch and a half below it; having completed this, and laid bare the fascia of the cord, a small opening was made to the extent of about an inch below the abdominal ring, and a director put into it. Having insinuated the director between the fascia of the cord and the cremaster, I passed it under the abdominal ring; and carrying a probe-pointed bistoury upon this director, divided the ring to the extent of an inch. I then put my hands on the side of the tumour, a portion of the intestines was returned into the cavity of the abdomen, but all the force I could venture to use, could not return the whole. By dividing the stricture, however, the patient was relieved from the symptoms under which he had previously laboured. All you have therefore to do, is, to bring the edges of the wound together, and let the hernia remain.

SMALL INGUINAL HERNIA.

40. There is a small hernia that occurs above the abdominal ring, and does not emerge through it at all, which is equally dangerous as a hernia of twenty times its magnitude.

41. This is a case which it is difficult to ascertain in the living subject. A patient will come to you with symptoms of strangulated hernia, and you find a fulness on one side above the abdominal ring, which is not observable on the other; tenderness upon pressure of the part where the fulness is, and a great disposition to vomit.

The operation necessary to be performed is, to make an incision along the course of the inguinal canal, a little obliquely above the abdominal ring, so as to avoid making the opening large. The incision through the integuments, lays bare the tendon of the external oblique; having laid bare this tendon, and made an incision through it, the hernia immediately appears projecting through the edge of the wound. The hernial bag is covered by a tendinous process which passes from the upper aperture, from which the hernia proceeds.

As soon as the hernial sac is laid bare, a little fluid escapes. You will find the stricture at the orifice. You are to introduce a small director into the orifice, and divide the stricture by making a slit *upwards* with a probe-pointed bistoury.

INGUINAL HERNIA IN THE FEMALE.

42. Inguinal hernia is of less common occurrence in the female than in the male, in consequence of the smallness of the parts through which the ligamentum rotundum descends.

When this occurs, the hernia is generally small, and takes a similar course to that of inguinal hernia in the male, comparing the ligamentum rotundum to the spermatic cord. It begins midway between the spine of the ilium, and the symphisis pubis; its origin being situated on the *external side* of the epigastric artery. It then enters the inguinal canal, under the internal oblique and transversalis muscles, till it reaches the abdominal ring, where it emerges.

43. Inguinal hernia in females is generally reducible; they then require a truss similar to that used for the male; and as they are usually small, they will give way to pressure after about a year's use, but it will be right to continue the truss two years longer.

44. The operation for strangulated inguinal hernia in females, differs in some respects from that required in the male.

When you have made your incision upon the hernia below the ring, you will find that the peritoneal bag does not contain either intestine or omentum, and that nothing but a little water escapes. This leads you to slit up the abdominal ring, and on putting your finger within it, you will sometimes find a portion of intestine, and even omentum, contained within the sac, above the ring. Having divided the tendon of the external oblique, you will find a convolution of intestine has descended, and you will then look for the stricture, which you will generally find about two inches above the abdominal ring. Having slit up the tendon of the external oblique, from an inch to one inch and a half, and directed your assistant to draw it up, you will put a director within the sac, feel for the stricture, and dilate it *upwards* or *outwards*.

DIRECT INGUINAL HERNIA.

1. In this case, the hernia does not follow the course of the spermatic cord, but comes out almost directly through the external abdominal ring, and pushes before it the fascia transversalis. It passes on the *inner side* of the epigastric artery, and directly as it emerges from the ring, is received under the fascia of the cord, which forms one covering, and passes into the scrotum.

Direct inguinal hernia also differs from the oblique in these respects:—First, the oblique emerges from the abdomen, midway between the spine of the ilium, and the pubes, whereas the direct emerges directly behind the abdominal ring. Secondly, the oblique takes the course of the spermatic cord, and the direct passes directly through the abdominal ring from behind. And lastly, the oblique is covered only by the fascia of the cord and the cremaster, the direct has, in addition, a covering derived from the tendon of the transversalis and its fascia.

It first passes on the *inner side* of the epigastric artery, and directly as it emerges from the ring, is received under the fascia of the cord, which forms one covering; the cremaster passes over obliquely, so that the whole surface is not covered by it. Besides these coverings, it has one of its own, which is properly the covering of the hernia, half of which is formed by the tendon of the transversalis, and the other half by the fascia transversalis. This forms a complete tendinous pouch, in which the hernia is received.

2. *Diagnosis*:—Direct inguinal hernia may be known from oblique by the two following circumstances:—In the first place, tracing the spermatic cord, you will find that in direct hernia, the hernia is *behind* the spermatic cord; whereas in the oblique it is *before* it: secondly, when you trace the mouth of the sac, in oblique hernia, you will find it *above* the abdominal ring, towards the spine of the ilium; but in direct hernia, there is rather an inclination *inwards*, towards the umbilicus.

3. *Causes*:—The cause of direct inguinal hernia is usually the effort made to expel the urine in cases of stricture.

4. *Reducible*:—When the direct hernia is reducible,

you should apply the truss not so as to press upon the pubes, for this will give pain, but upon the parts a little above the abdominal ring.

You should not press upon the whole of the inguinal canal, as in the case of oblique hernia; but the truss should be applied so as to make its pressure bear towards the centre of the abdominal ring.

5. *Strangulated*:—When a direct hernia is strangulated, the patient is often in great danger, though it appears to be reduced, as the intestine may still be strangulated within the hernia.

CONGENITAL HERNIA.

1. The way in which this hernia takes place, may be thus explained :—The tunica vaginalis is open to the abdomen a little prior to birth, a portion of intestine is very readily admitted into this part, and the congenital hernia is produced.

The appearance of this hernia is well known to nurses; so that if the infant has hydrocele, it is said to have the *watery rupture*; if hernia congenita, the *windy rupture*.

2. It scarcely ever happens in the young subject, that any thing but intestine is contained in this kind of hernia, the omentum not reaching so low as the orifice.

When intestine or omentum has descended into the tunica vaginalis, reaching to the lower part of the scrotum, the testicle is involved in the swelling, so that it cannot be distinctly felt.

3. *Diagnosis*:—It is distinguished from common hernia by the testicle not being distinctly felt at the bottom of this tumour; and from hydrocele of the spermatic cord, for which it is often mistaken, by pressure upon the abdominal ring, after the swelling has receded in the recumbent posture, preventing its return upon rising to the erect position.

4. *Reducible*:—Previous to applying a truss, it will be proper carefully to ascertain, by examination, if the

testes have already descended into the scrotum; if not, let the hernia extend itself until it has gradually brought down the testicle into the scrotum, and then, and not until then, apply a truss.

5. *Irreducible*:—After the operation has been performed, which does not differ from that used for common hernia, you must bring the edges of the wound together, and make them adhere. In this way you leave the patient, with his irreducible hernia, but relieved from the dangerous symptoms of strangulation. The patient should wear a laced bag-truss after the operation.

The *encysted hernia* being very seldom met with, I shall pass it over in this treatise. Ed.

FEMORAL OR CRURAL HERNIA.

1. The seat of femoral hernia is the upper and forepart of the thigh, the protruded intestine passing out at the same opening through which the large blood-vessels are transmitted to the thigh, and consequently under Fallopius's ligament. It is most commonly met with in women.

Before femoral hernia protrudes, it elongates the femoral sheath, which forms a covering for it; it then descends on the *inside* of the epigastric artery, and though sometimes situated immediately over the femoral vessel, is very generally on their *inner* side.

2. *Diagnosis*:—The characteristic symptoms of crural hernia are, its situation, with respect to inguinal hernia; its capability of reduction, with regard to bubo; and the want of the effects of lumbar abscess, from that disease.

It is distinguished from inguinal hernia by the tumour being seated deeper and more laterally, and the ring of the abdominal muscles, which lies entirely above the tumour, in femoral hernia, completely surrounding the parts in inguinal hernia; from bubo, in the reducible state, by the capability of reduction; in the strangulated state, by the symptoms of strangulation; from psoas abscess, by the fluctuation of the tumour in the latter disease; and by the preceding long-continued and deep-seated pain in the loins.

3. *Treatment*:—The treatment laid down for inguinal

hernia will, for the most part, be applicable to the species now under consideration; but the truss required for this kind is different from that which will do in inguinal hernia.

The pad should be at right angles to the spring, placed lower down than in inguinal hernia, so as to cover the sheath, and the space through which the hernia protrudes. Femoral hernia, however, is rarely cured by the application of a truss, but it is right it should be worn, to prevent the farther descent of any of the parts.

4. *Irreducible:*—In this complaint it will be right to wear a truss with a hollow in the pad, so as to receive the hernia, and confine it; and if the hernial sac contains omentum, there will be a chance of its being absorbed.

5. *Strangulated:*—The symptoms of strangulated femoral hernia are more urgent than those of strangulated inguinal hernia; and the reason is, that the orifice through which the femoral hernia protrudes is smaller, and the pressure consequently greater.

The patient complains of more pain, and rarely lives so long as a person under the same circumstances with the other kinds of hernia. They generally survive four days if the stricture remain.

6. In your object at reduction, the taxis should be first resorted to; and if you fail in that, employ the tobacca injection, bleed the patient, and use the warm bath.

In employing the taxis for femoral hernia, the patient must be placed on the bed, with the shoulders elevated, the knees bent at right angles to the body, and approximated to each other, so as to admit an arm only between; then you use pressure on the hernia. It should be pressed *directly downwards*, in order to get it below Poupart's ligament; if you press it upwards, without having first done this, you will merely get it farther above the ligament. It must first be brought below the level of Poupart's ligament, and *then* knead it between the fingers and press it *upwards*.

7. These means failing, you must resort to the operation, for these are cases in which delay occasions much mischief, as there is less chance of reducing them than in inguinal hernia.

Operation:—In operating for femoral hernia, you make your first incision in the course of Poupart's ligament, along the tumour, extending from one side to the other; the second you make at right angles to the first, towards the umbilicus, so that the two incisions resemble the letter ⊥ inverted. The angular flaps are to be next dissected off, and reflected, so as to allow of greater room. By this incision, you expose the superficial fascia, which you next divide, and the hernial bag, called by some *fascia propria*, is brought into view. This is next cut through, and the hernial sac, or peritoneal covering, makes its appearance. The next point is to make an incision into the hernial sac, with the greatest possible care, and then introduce a director to ascertain the seat of stricture. Having opened the hernial sac, and exposed the intestine, divide the stricture directly *upwards* and *inwards*, a little inclined to the umbilicus. The seat of stricture in femoral hernia, is at the crural arch, just where the intestine leaves the abdomen; therefore in dividing the stricture, after introducing the director, a bistoury, blunted at the point, is to be put on it, and placed against the stricture; in this way there is no danger of wounding the intestine. The bistoury is next to be gently raised, and with a slight touch of the instrument, the fibres will give way, and by a little pressure, the parts are easily returned.

UMBILICAL HERNIA, OR EXOMPHALOS.

1. In umbilical hernia, some of the viscera of the abdomen, more frequently the omentum, pass out at the umbilicus, through an opening in the linea alba; and, as in other species of hernia, are included in a sac formed by the peritonæum.

Umbilical hernia is very common in infants soon after birth; also in adults where there is great obesity, and in pregnant women.

2. *Reducible:*—If the hernia is small, you may endeavour to reduce it by the hand alone; but if it is very large, you must take the bottom or flat surface of a wooden platter, and lay it on the abdomen, and press on it. When the pressure has been kept up for some time, the orifice at the umbilicus becomes dilated, and the hernia returns. When it is reduced, a truss must be worn, or pressure kept up over the part.

3. The treatment to be pursued in children, is to apply one-half of an ivory ball on the umbilicus, and over this, adhesive plaster, and a belt.

The belt, however, will be of no use unless supported by straps,

which come round the lower part of the belly and the thighs. A little waistcoat fastened by two strings will also prove useful.

4. In adults, at the beginning, the plan of treatment should be the same as in children; but if by means of the ivory ball, the hernia should not be returned within the opening of the umbilicus, a pad, covered with black silk, and fastened by adhesive plaster, is to be placed over the part.

Although a truss will seldom effect a cure, it should, notwithstanding be always worn; and the truss I would recommend, should consist of two broad belts, which must come round and buckle on the abdomen. But as this is continually liable to change place, a narrow belt joined to the broad one, should also go under the pendulous part of the belly.

5. *Irreducible:*—A hollow truss, on the same principle as the one employed in irreducible femoral hernia, should be worn in this complaint.

It should be buckled round the abdomen, and if omentum be contained in the hernial sac, it will be likely to be diminished in size, and the danger of the sac bursting will also be prevented.

6. *Strangulated:*—In strangulated umbilical hernia, before the operation is resorted to, tobacco clyster should be employed, as it has greater effect in relaxing the muscles and taking away the cause of the stricture in this than in any other kind of hernia.

Operation:—Although this is the most simple and easiest operation for hernia, it is not one of the most successful; there is a great difficulty of obtaining a flap of skin to close the opening. The plan you are to adopt in operating, is to make first an incision across the tumour, and then another at right angles, so that the whole is like the letter ⊥ inverted. The integuments being thus divided, the corners of the incision are to be turned aside, by which the hernial sac is brought in view. This being carefully opened, the finger is to be passed to the orifice of the sac, at the umbilicus, and a blunt-pointed bistoury introduced on it. The stricture is to be divided *upwards*, in the direction of the ensiform cartilage. Having returned the intestines, the parts are to be brought together, and a flap formed from above to cover the opening. If adhesion of the sides of the wound can be effected, the danger of peritoneal inflammation will be lessened. Dossils of lint and adhesive plaster are to be applied over the wound. The after treatment is the same as for other herniæ.

VENTRAL HERNIA.

1. Ventral hernia is a protrusion of the intestines through the different lines of the abdomen, except at the umbilicus.

I do not know that there is any thing in this kind of hernia requiring a distinct notice. When it occurs low down, care must be taken, when operating, of the epigastric artery.

URINARY CALCULI.

1. These are found in four different situations in the urinary organs; viz. in the kidney, ureter, bladder, and urethra.

The calculi, which are discovered in the prostrate gland, are not, in general, of the same kind as those met with in the organs just named.

CALCULI IN THE KIDNEY.

1. When a calculus is situated in the kidney, there will be felt considerable pain in the loins, in the vicinity of this organ, and occasionally it will be so very acute, and the part so exquisitely tender, that the afflicted person cannot allow even the slightest pressure over the loins. The urine, bladder, and sometimes the stomach, also afford characteristic marks of their presence.

When a calculus is situated in the kidney, it is often accompanied by a numbness of the intestinal tube leading from the kidney to the navel. There will likewise be felt great pain in the act of stooping, with frequent inclination to make water. The urine is frequently of a dark colour, from being mixed with blood; when this appearance is present, coupled with excruciating pain round the loins, it will generally happen that the stone is then in the act of descending, and in a few days afterwards, you will probably find that it has entered the bladder. There is also frequent vomiting; and excessive irritability of the bladder.

2. In these cases, nature generally makes attempts to discharge them through abscesses formed in the loins; unless, indeed, they are small enough to descend through the ureter.

Calculi often cause an absorption of the kidney; and when both kidneys are affected at the same period, or if they successively become destroyed, in either case death must ensue.

3. *Treatment:*—But little can be accomplished by the medical man in these affections; when the stone, however, is composed of uric acid, the exhibition of potash or soda may be attended with considerable advantage.

These medicines will not dissolve a stone when once formed, but I am inclined to believe that they prevent the further deposition of uric acid, and most decidedly lessen the irritability of the urinary organs; and by covering the surface of the calculus, with a sort of mortar, it becomes much less annoying to the patient and much less irritating to the part in which it is contained.

4. If the calculus is too large to be passed into the bladder, you will be able very readily to feel it by a probe, through the openings formed by ulcerations for its escape; and in order to prevent the closure of the sinus, by granulation, you should introduce a sponge tent.

With a view of facilitating the escape of the stone, you may dilate the sinus by means of a histoury; for there will be no danger in doing it, as the emulgent artery and vein are situated behind the calculus.

CALCULI IN THE URETER.

1. When the stone has descended from the kidney into the ureter, there will be felt great pain at different parts, according to the sympathy existing between those parts and the course of the ureter.

At first there will be great pain at the spine of the ilium, at the anterior superior spinous process, in the course of the psoas muscle, and over the surface of the abdomen; as it passes along the ureter, at the time it crosses the lumbar plexus, there will be experienced very great uneasiness in the groins, and in the course of the anterior crural nerve down the thigh; when it goes over the spermatic plexus, the cremaster will be spasmodically contracted, and there will be felt severe pain in the testicle; the stomach will likewise be particularly irritable and continually eject its contents; the skin covered with cold sweats; and a death-like paleness of the countenance.

2. The pain experienced in this complaint, is not constant, but comes on at intervals; after continuing some minutes, a complete remission occurs; but after a lapse of ten or fifteen minutes, it returns with as much severity as before.

The symptoms just mentioned, teach you, unequivocally, that a stone exists in the ureter.

3. *Treatment:*—During the violent paroxysms of suffering, the patient should be bled to syncope, with a view of preventing inflammation; opium and potash should be given to diminish pain and lessen irritability; and the patient may be put into the warm bath.

When the patient is in the warm bath, you should set by his side and rub the abdomen in the course of the ureter; for the urine having collected above the stone, and its vis à tergo being insufficient to push the calculus onward, friction, properly directed, will prove of great service by its mechanical influence on the accumulated fluid, and it will be found agreeable to the patient rather than otherwise.

4. If nature, and the attempts of relief, fail in passing the calculus on, the disease then necessarily terminates in the destruction of life.

STONE IN THE BLADDER.

1. Directly the calculus has passed from the ureter into the bladder, the symptoms change.

There will be micturition; pain or a sense of irritation at the extremity of the penis, greatly increased upon making water, to the evacuation of which there is frequently a sudden stop, followed by an almost insupportable sense of bearing down; and at the ejection of the least drop, the pain amounts even to torture.

2. The diagnostic symptoms of stone in the bladder, are, pain towards the extremity of the penis, opposite to the frœnum; discharge of bloody urine; sudden arrest of the water during the flow of a full stream; and a frequent

disposition to void the urine; and pain in doing it, particularly in the erect position.

The sudden arrest of the flow of urine, is in consequence of either a valve formed in the urethra, or the stone resting against the neck of the bladder.

3. When a person under this complaint is voiding his urine, he is observed to place himself in a position in which every muscle may be as relaxed as possible; his knees are bent, his head resting against some object for support, while he draws the prepuce forcibly over the glans penis.

The urine is not changed unless there is much irritation in the bladder; but if the stone has been of long standing, and there is disease in the bladder, there will be clots of blood in the urine. Again, in the attempt to pass urine, there is a disposition to void the fæces, as the rectum obeys the motion of the bladder.

4. In many cases the abdominal muscles are affected with violent spasms.

First, persons are affected with violent spasms of these muscles; then have disease of the mucous membrane of the bladder, and frequent shiverings.

5. When boys are the subject of this disease, there is generally a remarkable elongation of the prepuce.

This is singular, and not easily explained, unless it is produced by pressure on it when the pain at the extremity of the penis comes on; for as the pain in this part is an exceedingly distressing symptom, and pressure on the nerve deadens it, it (pressure) is made, and the prepuce thus becomes elongated by it.

6. Calculi either pass from the ureter, or they are formed in the bladder around some extraneous body, or around clots of blood, in either case forming a nucleus for the stone.

7. The calculi will be composed of the triple phosphate, or of uric acid, according to the degree of irritation which has been kept up; if it has been considerable, the stone will contain the triple phosphate.

Some stones are composed of concentric lamellæ, whilst others are not; in those which are, layer after layer is deposited and adheres, but the lamellæ are composed of much firmer materials than the bond of adhesion which unites them.

8. *Variety* :—There are four different kinds of calculi, when chemically examined. The first is the uric acid, which is common, but not the most common form of calculus. The second is the triple-phosphate, or ammoniaco-magnesian phosphate. The third species is the mulberry, or oxalate of lime: and the fourth, the cystic.

Uric Acid Calculus :—Is distinguished by concentric lamellæ, and when cut, has the colour and appearance of wood. It is soluble in alkalies, and alkaline remedies are commonly recommended for this kind of stone.

Ammoniaco-magnesian Calculus :—Is of a greyish white colour, and not so distinctly laminated as the uric acid. It is not soluble in alkalies, but it is acted upon by the acids, but not in any considerable degree. A quantity of matter resembling mortar, which is in fact, ammoniaco-magnesian phosphate, is generally passed from the bladder, and the urine is highly offensive.

Mulberry Calculus :—Consists of oxalate of lime, and is, to a certain degree, soluble in acids. It will be proper, therefore, to give in these cases, muriatic or sulphuric acid; the muriatic is generally preferable.

Cystic Oxide Calculus :—Has the appearance of brown sugar in a state of crystallization: it is not composed of concentric lamellæ.

9. Calculi in the bladder vary both in number and in size. Their usual weight is from half an ounce to an ounce, more generally under, and there is usually only one at a time; but I do not imagine the patient is in greater danger in an operation from a larger number of stones being in the bladder, or even so much, as when there is only one large or moderate-sized one.

It is not the frequency of introducing the forceps for withdrawing calculi from the bladder that is dangerous, but it is the bruising, from pressure, which gives rise to the destructive symptoms.

10. *Treatment* :—Although some little benefit may be derived from the use of alkaline remedies, by lessening the irritability of the bladder and constitution, the stone will still remain, and surgery alone will be the only effectual means by which the sufferings of the patient can be removed.

Soda, and the usual list of alkalies, may sometimes prove beneficial. The liquor potassæ conjoined with opium, has considerable effect in

diminishing irritability, and it should be given for some time before the operation for stone. This medicine has a very beneficial effect in children who have stone in the bladder, and pass a large quantity of matter; it will remove this excessive secretion, and enable you afterwards to perform the operation with success.

LITHOTOMY.

11. In speaking of lithotomy, I shall commence by pointing out the circumstances to be attended to before the operation, name the instruments required, and finally the different ways of extracting calculi from the bladder.

12. The first circumstance to be considered before you operate, is, whether the constitution of the patient is in a sound state, or his general health good; for there is no operation in which an attention to these points is more necessary, before it is performed, than that for stone.

The person should be in good health at the time, for unless he is, there will be little hopes of success. Those who have been exposed to the vicissitudes of life and poverty, and have been obliged to labour for their bread, generally bear the operation for stone well, and in those persons the chance of success is generally greater than in the higher ranks of society, and those you usually meet with in private practice.

13. Great advantage will be derived from putting your patient on vegetable diet for a few days before the operation; and giving the solution of potash with opium. He should also be sounded frequently.

The introduction of the sound, accustoms the bladder to irritation, and when it has been done pretty often before the operation is performed, the patient bears it infinitely better than when he has been operated on without.

14. If the bladder is ulcerated, do not perform the operation on any account, for it will not be successful. But especially never submit a patient to the operation for stone, if there is the slightest affection of the chest, the least difficulty of breathing, any signs of asthma, or any irregularity of circulation.

Unless the patient is suffering exceedingly from the stone, you should not operate until he is free from every other complaint.

15. Old age is no objection to the operation, for the best time of life fitted for it is about sixty-one or two; and at this period a great number of cases occur. After this, the danger increases, but between sixty and sixty-three, more cases recover than at any other period.

If a patient is loaded with fat, there is always danger of peritoneal inflammation. Again, when there is an enlargement of the prostrate gland, you should not operate.

16. Children, before they are four years old, are in considerable danger from the operation. After four, they acquire strength, and the irritability of the constitution is much lessened.

Under four years of age, convulsions frequently come on after the operation; and in three days the children often die, more especially if they have lost much blood at the time of the operation.

17. The day before the operation, you should give your patient an injection, and the rectum should be completely emptied, otherwise it will be in danger of being opened in the operation.

18. *Instruments:*—The instruments employed in the operation are, bandages, a sound, a staff, a gorget, forceps, knife, and the *bistourie cachée;* not, however, that these are all necessary for every operation.

19. *The Sound:*—Should be fitted to the size of the urethra, for if a small sound should be used in a large urethra, or vice versa, the stone will very often escape being felt.

Sound the bladder both when it is full and when it is empty. If there is an enlargement of the prostrate, the point of the sound frequently strikes against it, or passes over it, and in these cases the stone commonly escapes detection.

20. *The Staff:*—This should be as large as the urethra will admit, and a little more curved than the sound; let

the groove be large and deep, which will lessen the danger of the knife or gorget slipping in its passage to the bladder.

In using the staff, it should be held perpendicularly on the stone, (never on the prostrate gland); then, when the gorget is introduced into the groove, it goes to the stone, and the forceps may be passed directly to the spot where it is.

21. *The Gorget:*—The gorget, which was first employed in the operation of lithotomy, had no cutting edge; but the gorget I am in the habit of using has its cutting edge continued only *part* of the way back, in consequence of which, I know the exact size of the opening that is made into the bladder, and it is an effectual safeguard against wounding the external pudendal artery.

In using the gorget, great attention should be observed to prevent its slipping between the bladder and rectum; it is a most horrible accident, and most horrible in its consequence.

22. *Forceps:*—The ordinary lithotomy forceps have their bend or joint two-thirds of their way down.

23. *The Knife:*—This is perhaps the most simple instrument that can be used, but I do not approve of it in all cases so well as the gorget or the *bistourie cachée.*

The result of my experience has convinced me that, in old persons, the knife is not so good an instrument, as either the gorget or the *bistourie cachée*; but in young persons it may be used with perfect safety.

24. *Bistourie cachée:*—This instrument consists of a knife, inclosed in a sheath, which, after being introduced into the bladder, and turned with its edge downwards and outwards, cuts its way out when withdrawn.

It was invented by Cosme, a French surgeon, about one hundred years since.

25. *Lateral Operation:*—Having given you a general description of the instruments required in the lateral operation for stone, I will now proceed to show you how it is performed with the knife, and then with the gorget.

With the Knife:—The patient being placed in a favourable situation, on a table about two feet six inches high, and properly secured by bandages; first sound him again, afterwards introduce the staff, and having it (the staff) resting on the stone, begin by making an incision in the left side of the perinæum, commencing at the symphysis pubis, and carrying it *downwards* and *outwards* to midway between the anus and tuberosity of the ischium, the termination of the incision being opposite to the centre of the anus: this cut will pass through the skin and fat, and expose the accelerator urinæ. Divide this muscle between the bulb of the penis and left crus; and then with your fingers press the bulb under the right ramus of the ischium, to prevent its being wounded; which being done, divide the transversus peronæi, and feel with the left index finger for the groove of the staff, cut into the groove at the membranous part of the urethra, and bringing down the handle of the staff, push the knife forward into the bladder, and then cut through the prostrate gland, and the neck of the bladder *downwards* and *outwards*, corresponding to the external wound. Again pass your finger into the wound, and feel for the groove of the staff, then withdraw that instrument. Keep your finger in the bladder, and pass in the forceps with their flat side next to it; having with the forceps carefully felt for, and satisfied yourself of the situation of the calculus, grasp it within the bladder, and carefully withdraw it.

With the Gorget:—All the first part of the operation with the gorget is the same as with the knife; the staff being introduced, and the opening into the groove through the membranous part of the urethra having been completed, you must fix the beak of the gorget in the groove, and bringing the handle of it towards you, at the same moment push the gorget into the bladder, with its point directed with a considerable inclination upwards; the staff must now be withdrawn, and the forceps passed into the bladder, along the hollow of the gorget; then remove the latter instrument, and extract the stone as before.

26. *High Operation:*—It has lately been proposed to remove stones from the bladder by performing the high operation, but it is by no means an advisable operation. The instruments employed are, a probe-pointed bistoury, the *sonde-à-dard* (a sound containing within it a dart or stillet,) and a pair of forceps, similar to those used in the lateral operation.

Pass the *sonde-à-dard* into the bladder, and by depressing the handle, endeavour to make its point project just above the symphysis pubis, in a line with it and the linea alba; force on the stillet, and in this situation it will make its appearance. An incision must then be made about two inches in length in the direction of the linea alba, through the integuments down to the bladder, which is supported against the part by the point of the sound; and then with a probe-pointed bistoury, make an opening into the bladder against the edge of the wound, withdraw the *sonde-à-dard*, pass down the forceps, and thus remove the stone.

27. Operation of lithotomy through the rectum is

sometimes recommended, because it is simple and can be easily done; but, notwithstanding this, I can tell you it is a dangerous operation.

28. *Difficulties:*—There are many difficulties in the operation of lithotomy.

29. A large calculus is a most serious obstacle to both the performance and success of lithotomy; it is a difficulty of a horrible nature; and, in consequence of the bruise which the neck of the bladder receives, from the force necessary to be employed in its removal, generally proves fatal.

There is no comparison in the danger arising from a number of small stones, compared with one large one: the small stones, if you are careful, can all be removed without doing any violence to the parts; but with a large one, this is impossible.

30. Large stones, when connected with enlarged prostrates, present difficulties much greater than when the gland is in a healthy condition.

Operations on such patients are dangerous to the last degree: for it is scarcely possible they can recover from them.

31. A deep perinæum is also a great obstacle, as the distance of the bladder from the external parts throws great difficulty in the way of the operation.

The force which it is necessary to employ in such cases, is often so great as to lead to the destruction of life.

32. It not unfrequently happens that a cyst is formed in the bladder, in which the stone is partially or entirely contained. If the cyst includes the stone entirely, the symptoms of stone cease. In general they are connected with an enlarged state of the prostrate gland.

33. The bladder sometimes undergoes a partial contraction, and so firmly embraces the stone, that, when you introduce the forceps, there is no space between the bladder and the calculus, and the instrument constantly slips from the stone. In this way, the patient is often exhausted by the repeated attempts at extraction.

The contraction alluded to happens in this way:—Surgeons are generally anxious to allow the patient to retain a considerable quantity of urine in his bladder, in order that the sudden gush of water, on the introduction of the gorget, may inform them that the instrument has pierced the bladder. This practice, however, is wrong, as it is productive of the circumstance we have just related.

34. Soft stones require the use of the scoop. A number of calculi will require either the frequent introduction of the forceps, or the use of the scoop.

35. If, upon introducing the gorget, considerable hemorrhage should arise, this, after the stone has been extracted, may be checked, and entirely stopped by keeping the patient cool, and by plugging the wound with sponge or lint.

While there is any bleeding, it would be highly improper to place the person in a warm bed, as the increased temperature would necessarily augment the disposition to hemorrhage. Do not apply ligatures to the vessels on account of these bleedings, as they often, under such circumstances, give rise to sloughings.

36. *After-Treatment:*—Having gone through the principal difficulties which are sometimes met with in the operation for stone, we will now turn our attention to the after-treatment.

37. Formerly dressings were applied to the wound, and consequently injections were thrown into the bladder, with a view of removing every remaining fragment of stone; but in the present day, the wound is left open, so that the urine may distil as freely as possible; and in this way any remaining portion of calculous matter is carried away.

The urine frequently passes in the right course in about twenty-four hours after the operation; sometimes, however, not till after three or four days; this will depend, in a great measure, on the size of the stone. In general, the patient has a rigor, when the urine returns to its natural course; you need not, therefore, be alarmed at this symptom.

38. Opium should be given to the patient as soon as the operation is over: indeed, in some cases, where the patient is exceedingly irritable, I give opium two or three hours before the operation is performed.

I do this with two views, first, because the opium deadens the sensations of the patient, and he suffers much less pain from the operation; and secondly, because it renders him much less irritable.

39. Diluents should be freely drank, and a small quantity of soda or potash should be put in his diluted drink. Gum is also sometimes added.

Gum is said to have the power of soothing the parts, and diminishing the irritating quality of the urine.

40. The danger after the operation for stone, is that of peritoneal inflammation. Its first attack is to be treated by leeches, fomentation, and, if necessary, bleeding and the warm bath.

On the day after the operation, therefore, you should put your hand on the lower part of the abdomen, and inquire whether there is any pain. If there is any tenderness of the peritonæum, you should apply leeches to the abdomen, and foment it. It will be often necessary to take away blood, to put the patient in a warm bath, if the symptoms are urgent. Vomiting is very frequent, when the abdomen is in a tense state.

41. The subsequent treatment will consist in giving considerable doses of calomel. Purgatives and anodyne injections should also be administered.

Calomel is a very useful medicine in this case, not only as a purgative, but because, combined with opium, it diminishes irritability, and lessens the disposition to inflammation in the abdomen.

42. The time in which a patient recovers is generally from seventeen to twenty-one days, under favourable circumstances.

STONES IN THE URETHRA.

1. When a stone is lodged in the urethra, it is found in three situations:—first, in the perinæum; secondly, opposite the scrotum; and thirdly, opposite the frænum.

When you find a stone in the urethra, it will be in vain to attempt to extract it with forceps, even when it is felt very near the orifice of the urethra, or when you can see it by opening the orifice, you can very rarely succeed in extracting it with the forceps.

2. If the stone is lodged in the perinæum, and the patient is labouring under retention of urine from that cause, be very much on your guard not to displace it from its situation.

What you should do is to pass the largest-sized bougie into the passage, so as to reach the anterior surface of the stone; you should then tie the bougie to the penis, so that the urine may not escape by the side, and let it remain for a considerable time in the urethra. The patient will have an urgent desire to make water, but you must desire him not to attempt to pass his urine until you give him permission to do so. When the urgency of making water is so extreme that the patient can no longer endure it, untie the bougie from the penis, and as soon as it is withdrawn, the urine accumulated behind the stone will gush forward, and the stone will generally pass into the vessel also.

When the stone is lodged opposite the scrotum, there is danger of the urethra giving way, and the urine escaping into the cellular tissue. In this situation they sometimes prove fatal.

When you have ascertained by the probe, that the stone is in this situation, you must endeavour to push it about an inch behind the scrotum, where you should make your incision. It is wrong to make the incision through the scrotum itself, if you can avoid it; but if you are obliged to do so in consequence of your being unable to push back the stone, make the opening as large as possible, so that the water may pass with great freedom through the cellular tissue, and escape externally.

3. If the stone is lodged in the urethra, opposite the frænum, a different plan will be necessary.

I have told you that you can very rarely succeed in extracting them with forceps; what you must do is, to curve the end of a probe as much as possible, pass it down the urethra beyond the stone, and then withdrawing it, you will generally succeed in extracting the stone. If there should be great resistance, you may enlarge the urethra a little with the knife at the frænum.

STONES IN THE PROSTRATE GLAND.

1. There are two species of calculi in the prostrate gland; those which pass from the bladder in consequence of ulceration, and those which are found in the cyst formed in the prostrate gland itself.

Stones in the prostrate differ in composition from those in the bladder: they consist of phosphate of lime.

2. Calculi in the prostrate gland may be readily detected by introducing your finger into the rectum; and may very readily be extracted by an appropriate operation.

The case in which I was called upon to operate, I did not open the bladder, but having introduced a staff into the bladder, I made an incision in the perinæum towards the prostrate gland, and found but little difficulty in extracting them, either with my finger or with the forceps.

LITHOTOMY IN THE FEMALE.

1. Calculi form as readily in the female as in the male; but the female is much less frequently the subject of the operation of lithotomy, in consequence of the shortness of the meatus urinarius, and the ease with which stones pass through it.

2. The symptoms of stone in the female are more urgent than those in the male; indeed it is horrible to witness the suffering a woman experiences in consequence of this disease.

She has a dreadful pain at the extremity of the meatus urinarius, and in addition to this, there is a forcing down of all the lower parts of the pelvis, as if they were about to protrude; a frequent disposition to make water, and all the pains suffered during delivery. There is generally a prolapsus uteri, and a discharge of bloody urine. In addition to these symptoms, there is almost constantly an incontinence of urine, a great urgency to discharge it, and an incapacity to retain it. The constant excoriation of the parts from this cause, keeps the patient in a most offensive state.

3. Stones may be removed from the female, either by dilating the meatus urinarius, or by lithotomy. The extraction by dilatation is, however, greatly to be preferred, not only because there is much less danger in it, but because it does not leave the patient without the power of retaining her urine, which the other operation does.

CALCULI IN THE SUBMAXILLARY DUCT.

1. Stones are occasionally found in the duct of the submaxillary gland, and produce irritation, the cause of which is unintelligible to the patient, and often not distinguished by the surgeon.

The unpleasant feelings produced by stones in this part, occur at and after meals; the stones arrest the progress of the saliva, and produce irritation of the surrounding muscles; a swelling forms at the mouth of the duct; day after day the swelling returns, and at last the patient puts his finger along the side of the tongue, feels something hard there, and by this means the presence of stone is discovered.

2. Calculi in this situation require an operation, which, if care is taken, may easily be executed without danger of wounding any vessel.

You must place your finger under the jaw, and press against the gland; an assistant holds the cheek on one side, so as to bring it as far as possible to the ear; you then perceive the duct under the tongue; you raise the duct and tongue, and feel for the stone, and having discovered it, you elevate the cyst, and with a cataract knife cut on the stone, and then, with the end of a hook, you pull it out; but lest you should wound some artery, and have troublesome hemorrhage, be cautious to raise the duct as much as you possibly can.

DISEASES OF THE BREAST.

1. You find the breast subject to cancerous affections, others of a different character; some that are not dangerous to life, though they require an operation for their cure; others that are not dangerous, and do not require an operation; and you find it also subject to some diseases which, with an operation, or any other means you may try, generally terminate unsuccessfully.

When you see disease of the breast, do not be in too great haste to put them under any classification, as it requires attentive observation to distinguish one from the other, and if you do, you will frequently be liable to error.

HYDATID, OR ENCYSTED SWELLING OF THE BREAST.

1. The breast suffering under this complaint, is at first hard, and afterwards passes into the fluid state. It consists of numerous cysts containing water, as in hydatids or cysts that are found in any other part of the body.

2. There are but two species of this complaint; the one which contains a fluid like serum, in cells; the other a globular hydatid, such as is found in the liver and other parts of the body.

3. *Diagnosis:*—This swelling is first hard; in the second place, fluid; thirdly, unattended with pain; and fourthly, there is no discolouration of the skin, or any particular constitutional irritation, excepting when ulceration commences, and then it is slight, and not at all alarming to the patient's mind.

This disease never requires removal on account of any thing malignant in its character, but it is generally done at the solicitation of the patient, in consequence of its inconvenience. When it has acquired any considerable magnitude, a slight inflammation begins in one part, and then this ulcerates, which allows of the discharge of a serous fluid. This being discharged, and the cyst empty, suppuration, with particular adhesive inflammation, is set up, and the cyst becomes obliterated; another undergoes the same process, and so on, one after another. A sinus seems to form, which leads from that in a state of suppuration to another cyst, and thus it undergoes the same change as the one with which it communicates. In this way, after a lapse of time, the disease becomes wasted.

4. It occurs at almost any period after puberty, under twenty, and after fifty; but you will more frequently see it in the young than in advanced age.

5. When the disease has increased to such a size, that the patient is solicitous it should be removed, you may do it, as it is neither dangerous at the time nor in the future.

In operating, if any diseased part should be left on the gland, there will be a chance of the return of the disease, therefore, the best plan is to take away the entire glandular structure of the breast.

6. Although the removal of the breast is the plan usually adopted, I have employed a different treatment when there has been a single cyst, with perfect success.

If the disease consists of a single cyst, I would recommend you to pierce it with a lancet, the fluid will then escape. Do not close the opening until the adhesive process has commenced, and glued the cyst; in this way the disease may be cured. The cure may also be effected by leaving the cyst open for granulation.

SCIRRHOUS TUMOUR, OR CANCER OF THE BREAST.

1. This is one of the two malignant diseases to which the breast is subject, and is extremely frequent in its occurrence. The symptoms of this horrible complaint may be conveniently divided into the incipient, the inflammatory, and the suppurative stages.

It is supposed by some, that the name of *cancer* was given to this disease, on account of the appearance of the surrounding veins. I should rather say, it was from the appearances on dissection; for when you dissect a scirrhous tumour, you will see a number of roots proceeding to a considerable distance.

2. The first symptoms of a scirrhous breast are, a hard, circumscribed, and moveable swelling; little or no pain, and sometimes a discharge of blood from the nipple.

The tumour, however, is not always circumscribed, for it sometimes happens that inflammation extends, and the disease is lost in the surrounding parts. The disease continues in the first stage for a long time, for weeks and months, gradually increasing, and at last the second set of symptoms comes on.

3. In the second stage there is violent darting pain; a burning sensation in the part; the patient feels worse a little before menstruation; enlargement of the tumour, and of the neighbouring glands; a puckered appearance of the skin about the nipple, &c.

In the progress of the complaint a number of small black spots will be seen in the breast, and these increase as the breast enlarges. Inflammation on the skin and nipple comes on, and the cellular membrane partakes of the character of the disease.

4. The third set of symptoms arises from suppuration going on in the part. The constitution becomes severely affected; there is a difficulty of breathing, an inability to lie but on one side, pain in the right side, and also in the loins. The stomach is deranged, severe spasms at the scrobiculus cordis, and frequent vomitings come on; at last the patient is worn out from irritation, and expires.

Prior to an opening being formed, the skin becomes livid, and the breast is very painful in that part where it opens; and when the ulcerative state has begun, the glands above the clavicle enlarge, the arm swells just above the elbow, then it extends over the hand, fore arm, and upper arm. There is an interruption to the functions of the absorbent system; the blood is not returned by the veins; an increased secretion takes place from the termination of the arteries; fluid is thrown out into the cellular tissue, which, when evacuated, coagulates.

It is not true pus which is generally secreted, but after the adhesive process has been set up, there is an attempt at the formation of pus, which, if it forms, is not general, being only in some parts, and not in others: and it is more properly a sanious serum, as it has not the common character of pus.

5. Married women who bear no children, and single women, are more subject to this complaint than those who have large families.

It is very probable that the natural change which the breast undergoes in the secretion of milk, has some power in preventing this disease; but is no security against the complaint, though it lessens the tendency to it.

6. The progress of this complaint is in some persons extremely slow. In general, however, it destroys life in about four years from its commencement.

It is from two to three years growing, and from a year and a half to two years in destroying life, after it has arrived at its acmé. When suppuration and ulceration have commenced, and the constitution is disordered, it is even then some time before the patient is worn out.

7. *Cause:*—This disease is frequently the consequence of grief and anxiety; it is also attributed to an accident of some shape or other to the part; but this is not the proximate cause of the complaint. The constitution itself must either partake of, or there must be a specific action in the part.

If there is a disposition in the constitution, to the production of this disease, in any part, some circumstances exciting a peculiar action in it must occur, and then scirrhous inflammation is produced. The disease is made up of a derangement in the constitution, and of a local peculiar action; it is the effect of a specific action in the part, preceded by a disposition in the constitution, to its production.

8. The scirrhous tubercle is said to be fibrous; but the fibres do not belong to it, they are nothing more than the cellular tissue thickened.

9. *Treatment:*—We have no medicines that can cure this disease; but if a patient applies to you with scirrhous tubercle, and her general health is in a disordered state, you may retard its progress by giving alterative medicines.

You should never operate unless the patient has undergone a course of medicine.

10. Another view with which medicine is to be given is this: if an operation has been performed, you should alter the state of the constitution by the exhibition of alterative medicines, (Plummer's pill, and compound decoction of sarsaparilla, or soda with rhubarb,) by which means you will improve the general health, and lessen the chance of the disease returning.

You may alter the constitution in this complaint, but it is impossible to disperse scirrhous tubercle when it has formed. Therefore, all we can do by medicine, is to change the state of constitution prior to an operation, so as to prepare the patient for it; and when an operation has been formed, we can give alteratives so as to lessen the chance of its returning.

11. As to local treatment, we possess no specific local application. They can do nothing more than retard, in some slight degree, the progress of the disease. The best application is the soap cerate; or, if there is much pain, I would have a drachm of extract of belladonna to be rubbed down with an ounce of the soap cerate.

Evaporating lotions, and warm applications should never be used, they do more harm than good; but the remedy just recommended, diminishes the nervous irritability of the part, and excites a gentle perspiration without any undue heat.

12. If there is much inflammation, you can apply leeches, though the mode of treatment which I like, is, to

give those medicines which restore the constitution generally.

You may restore the different secretions, by Plummer's pill, and diminish the irritability of the nervous system by carbonate of ammonia. This is the best plan, as far as I know, to keep the patient alive as long as the case will permit.

13. With respect to diet, it must not be too low; but let your patient take those things which she finds agree with her own feelings, and which do not derange the general health. Wine or spirits must not be taken, or if wine is allowed, it should be mixed with water.

Never hurry the constitution, nor give her anything so as to disorder the constitution, but support the strength by animal food. Do not debilitate it then on the one hand, nor stimulate it on the other; for if you do, it will be the sure way to hasten the progress of the disease.

14. Climate has been supposed to have an effect in preventing that state of the constitution which favours the return of the disease, but it has no such influence.

15. *Operation:*—The operation for the removal of a scirrhous breast, should not be performed if the glands of the axilla generally are enlarged, for it will be sure to return.

The operation is nothing more than a simple piece of dissection; it consists of making a semi-circular incision at the upper part of the breast, and over the tumour. In this step, you cut through the vessels which supply the scirrhus. When the mammary artery and its branches have been divided, you desire an assistant to compress the vessels by pressure, just above the incision, and you then go on excavating the parts and cellular tissue; the pectoral muscle is laid bare (and it is a good plan always to do this,) lastly, it is right to divide the integuments below the tumour, lest, as it sometimes happens, a gland is enlarged in the axilla; then it will be best to remove it, and the intervening part between it and the breast; for if you cut out the gland only, the disease returns, and it is always attended with unfavourable results. After the breast is removed, bring the edges together by one or two sutures; and when you observe a drawing in of the nipple, always secure that part.

16. Remember, that if in operating, you remove the tumour only, and not the roots before alluded to, there will be but little advantage derived: no glandular structure, nor any of the roots, should be allowed to remain.

You must likewise, as we have already said, put your patient under an alterative course of medicine, both before and after the operation, else it will be of little use.

FUNGUS HÆMATODES.

1. This affection is one of the most dangerous maladies which can affect the human body, and although it has some resemblance to cancer, yet it differs from it in very many and essential particulars.

This disease has been described under various names, as the soft cancer, medullary sarcoma, bleeding fungus, and spongoid inflammation of Burns; but the name given it (fungus hæmatodes) by the late Mr. Hey, is that which is now generally employed.

2. Fungus hæmatodes begins with a soft enlargement of the part, which is extremely elastic, and in some cases very painful; as it increases, it often has the feel of an encysted tumour, and at length becomes irregular, bulging out here and there, and insinuates itself between the neighbouring parts.

The diagnostic symptoms of this disease, with regard to the scirrhous tubercle, are numerous; and those attending the early stages, may be named under three sets.

First: It attacks persons of all ages after puberty; whereas, cancer does not attack the very young, as we rarely see it under the age of twenty-seven.

Secondly:—This disease, in its early stages, by no means feels so hard as the true scirrhus. When you press upon it with your finger, the spot readily receives an indentation: but upon removing the finger, the hollow which it had produced, becomes instantly filled again.

Thirdly:—Likewise in the early stages of fungus hæmatodes, there is little pain or tenderness when pressed upon.

3. Thus, in the early stages, the want of hardness, want of tenderness, and want of pain, are the discriminating characteristics which should direct your judgment.

4. In addition to the diagnostic symptoms already given, there are two others which decidedly mark its difference from true scirrhus: these are, the tumour is not so

circumscribed, and the disease may advance even to suppuration and ulceration, without the glands of the axilla becoming at all affected.

The tumour which constitutes fungus hæmatodes is not so clearly defined as scirrhous tubercle: it is difficult to say where the diseased structure terminates, and where the healthy structure commences; the base of the tumour is, therefore, diffused among the healthy cellular membrane, or other parts where it it should happen to be situated.

5. Fungus hæmatodes attacks different parts of the body, more especially the testicle, the eye, breast, and the extremities. It is much quicker in its progress than true scirrhus; it grows much faster, the morbid action appears to be much more active, so that in six or eight months it will acquire a considerable degree of magnitude.

Thus in a few months, we find the disease of considerable bulk, having a livid surface, and a fluctuating feel, from a collection of fluid. The fluid contained in the cyst of fungus hæmatodes, is not of a malignant nature: it is sometimes perfectly transparent, but most frequently it is of a dark colour, resembling coffee, and composed of the red particles of the blood, serum, and bile.

6. As the diseased action goes on, inflammation is excited, and at length the cyst bursts; nature attempts to relieve, by exciting, in the cyst, the adhesive process; but failing in this attempt, (owing to a peculiarity of constitution,) a fungus sprouts forth, which rapidly increases, and there will be an enormous and disagreeable discharge.

This disease has a continued disposition to slough, and from which circumstance it occasionally receives a cure, for instances have been known, where the entire tumour has sloughed, and the wound healed kindly, to the permanent relief of the patient.

7. The disposition of the constitution to produce this disease in one situation, naturally operates towards producing it in another, and thus it will be present in many parts at the same time, although its severity in one particular spot will be the immediate cause of death.

The dissection of those who die of fungus hæmatodes, shews that it generally exists in different parts of the body at the same period; and the cellular membrane, together with many of the glands, will be found studded with tubercles. The liver, the lungs, uterus, ovaria, testicle, eye, brain and medulla spinalis, &c. are all subject to the disease; but of all the parts of the body most frequently attacked, there are none so much so as tendinous structures.

8. *Cause:*—When many important parts are affected at the same time, it is evident that the cause must be constitutional; in fact, it ever owes its origin to a peculiarity of constitution.

Although it may thus arise in almost every important organ at the same time, be thus generally diffused throughout the system, yet it appears that it may possess merely a *local* occupation of a part, and the neighbouring structures be entirely free from any morbid or diseased action; for upon removing fungoid tumours, we find that the wounds thus produced, heal as kindly as any other wounds caused by the extirpation of any other tumour.

9. *Treatment:*—This must be both medical and surgical, for if you do not attend to the general health, your other remedies will be useless.

With this view, you should allow him a nutritious diet, pure air, and a reasonable portion of exercise: you should likewise prescribe for him in the way of medicine, either the hydrargyrum cum cretâ, or Plummer's pill, together with some bitter infusion and soda.

10. The radical cure of this complaint is to be effected in two ways; the one by removing the fungoid parts; and the other, by endeavouring to occasion its suppuration by means of pressure. In either case, it is necessary, for the purpose of promoting a favourable issue of your surgical treatment, that you should attend to the state of the patient's constitution, both before and after they are employed.

11. If you have recourse to an operation for the removal of the part, you must make your incision *beyond* the discoloured or inflamed parts, for if you cut into the skin which has become reddened, it will, of course, have taken its peculiar morbid action, and the disease will unquestionably still continue to grow in that situation.

12. Much has been said concerning the largeness of the vessels in these tumours; but if these vessels are large, no danger ought to be apprehended from hemorrhage, as the bleeding can easily be stopped by pressure.

Blood-vessels situated in fungoid tumours, have no contractile power; consequently, when they are cut into, or divided, the bleeding from them will continue for a considerable period, unless pressure is employed.

SIMPLE CHRONIC TUMOUR OF THE BREAST.

1. This disease is not of a malignant character, and by no means dangerous to life; it is generally very young people who are attacked by it, and we seldom see it in persons above thirty years of age.

2. The age and healthy appearance of the person in which this state of breast is found, the lobulated feel of the tumour, and its lying more blended with the neighbouring parts, at once characterize it from cancer; neither will it ever become cancerous, or dangerous to life.

3. The size of the tumour is generally from that of a filbert or walnut to that of a billiard-ball. They may grow larger, and may be attended with pain at the periods of menstruation, but never will prove of serious consequence.

If, however, the mind should be rendered wretched, in consequence of such a tumour, an incision will instantly enable you to remove it, and thereby allay all mental irritation; but as far as the tumour itself is concerned, and as regards the health or safety of the patient, the operation is by no means necessary, or when necessary, is by no means dangerous.

4. The causes of these tumours are usually obscure; it is difficult to say what gives rise to them; but I believe a frequent cause may be traced to the pressure produced by the whalebone and steel busks usually worn in stays.

5. *Treatment:*—Medical treatment will not have any influence on these tumours; you may, however, for the purpose of correcting the state of the constitution, should any thing amiss exist in it, give the hydrargyrum cum cretâ, or Plummer's pill, together with soda and rhubarb; but take care you do not produce ptyalism.

ADIPOSE TUMOURS OF THE BREAST.

1. Tumours of this kind now and then occur in the breast, as well as other parts of the body. They are not dangerous, although sometimes of an enormous size; and may be removed by the knife with safety.

IRRITABLE TUMOUR OF THE BREAST.

1. Like the simple chronic tumour; is very common, and generally occurs between the age of fifteen and twenty-five. It is characterized entirely by its exceeding tenderness, and by the sanguinous temperament of the patient.

If you examine the tumour otherwise than with gentleness, she will experience pain for hours, and even days afterwards, so exquisitely tender is this irritable swelling.

2. There is no necessity for alarm in these cases; the cause of the disease is easily ascertained; it merely arises from functional derangement in the uterine secretion.

Although the tumour is painful in common, yet the tenderness and pain immediately before the period of menstruation, are almost incredible: the pain extends from the breast to the arm on the affected side, and down to the fingers' ends, and has been known to affect the sight.

3. *Treatment:*—There is no visceral disorganization in these cases, and to afford relief, you have merely to adopt such measures as are calculated to restore the proper quantity and condition of the uterine secretion. As the uterine discharge increases, the irritation in the breast lessens, and will soon completely disappear.

To accomplish this, the best medicine you can give, is an ounce and a half of the mistura ferri composita, two or three times a day; or from two to five grains of the ferrum ammoniatum, as often. Leeches I would not advise; neither an operation for removing the tumour. Rather attempt to cure the disease by the plan I have just prescribed.

CARCINOMA OF THE MALE NIPPLE.

1. The nipple of men is sometimes affected with cancerous ulceration, similar to the breasts of women. An incrustation forms on the surface of the nipple; this drops off, another succeeds it, and another to that again, until an ulcer is produced, and ultimately the whole nipple is destroyed; then the glands in the axilla, and likewise those above the clavicle, become diseased; and men die from this complaint precisely in the same manner as women do from cancerous breasts.

The chance of success from an operation depends upon its being performed before the axillary glands become diseased; if they are, you must not employ the knife. The medicines which are used for the carcinoma in the female, may be employed here.

AREOLA TUMOUR.

1. Tumours occasionally exist round the areola of children. Upon examining the breast, you will find a swelling as large as half-a-crown, just round the areola; flattened towards the outer edge, but convex in the centre, that is, the nipple, which the swelling surrounds.

They generally occur from seven to twelve years of age; boys as well as girls are subject to the disease; but I never saw either afflicted with it after the age of puberty, nor anterior to the age of seven.

2. Your treatment must consist in the application of the emplastrum ammoniaci cum hydrargyro; and at the same time you are using the plaster, you should give to the patient the eighth of a grain of the oxy-muriate of mercury in one drachm of the tincture of bark, twice a day; or, if the bowels should be disordered, you may give one drachm of the tincture of rhubarb, as a substitute for the tincture of bark.

The plaster that is used should have a hole in its centre, for the reception of the nipple; about every seven days it should be renewed. This plan, constantly followed, will subdue the disease in about six months.

LACTEAL TUMOUR.

1. Women, shortly after their confinement, are frequently annoyed by these tumours. They are very large, and upon examining them with your hand, you will readily perceive a sense of fluctuation: there is no pain, or any signs of inflammation; and the contents of the tumour is purely milk.

Your treatment should be to open the sac with a lancet; and after the milk has been evacuated, you should introduce into the opening, a sponge or cotton tent, this, in a short time, will excite inflammation in the sides of the sac; adhesive matter will be thrown out, which, glueing the parietes of the sac to each other, will be the means of gradually obliterating the cavity, and thus produce a permanent cure.

2. We have now considered the subject of diseases of the breast; we will next pass on to speak of retention of urine.

RETENTION OF URINE.

1. The most frequent causes of retention of urine are, strictures in the urethra, and enlargement of the prostrate gland, in the male; and retroversion of the uterus in the female.

There are several other causes which give rise to this complaint; an accumulation of blood in the bladder, stones in the urethra, or pressure of matter between the prostrate gland and rectum, will sometimes occasion a necessity for opening the bladder.

2. Before I speak more particularly of the means which surgeons recommend for relieving retention of urine by the knife, you should first well understand the introduction of the catheter.

No person should ever dream of performing any operation by puncturing the bladder, or in any other way, without first endeavouring to relieve the patient by the introduction of the catheter.

3. In passing the catheter in common cases, you have only to bear in mind two motions which are necessary to effect your purpose. But in cases of enlargement of the prostrate gland, there will be some difference in the mode of passing this instrument.

First:—When you are called upon to introduce the catheter, place yourself on the right side of the patient, pass it down under the arch of the pubes, perpendicularly, until you reach the membranous part of the urethra; and then do not continue to pass the instrument in that direction, for if you do, you will push it towards the rectum instead of entering the bladder; but having reached the membranous part of the urethra, you have only to give your hand a peculiar turn, and it will immediately pass the bladder.

Second:—When the prostrate is enlarged, the urethra is pushed forward, so as to be doubled on the point of the instrument. You must, in this case, pass the catheter down to the apex of the prostrate gland, then carry the instrument towards the abdomen, so as to push the urethra as much as you can towards the perinæum, and then having brought the urethra into a straight line again, depress the point of the instrument, and you will be enabled to pass it into the bladder.

4. The operation of puncturing the bladder may be effected in three different ways: above the pubes; through the rectum; and through the perinæum.

5. *Operation above the Pubes*:—The operation of puncturing the bladder above the pubes, is very simple, and is founded in the following anatomical circumstances: in the natural formation of the parts, the peritonæum falls from the inner side of the rectus, over the upper part of the bladder, and is reflected backwards to the fundus, leaving a *space*, filled with cellular tissue, between the pubes and the reflected peritonæum.

This is the space in which the operation is performed, and all that is required, is to make your incision through the integuments, to the extent of an inch above the pubes. It is best to open the integuments in the first instance, because the trocar will afterwards enter the bladder with more ease, and because, if there should be any extravasation of urine by the side of the instrument, it will more readily escape. The incision should extend as far as the linea alba. With respect to the direction in which the trocar is to be passed, you must not, on any account, direct the point downwards, towards the anus, but *obliquely* from the penis to the back of the pelvis, just towards the basis of the sacrum. The trocar and canula being introduced, the water passes through the canula; and an elastic gum catheter should be introduced through the canula, and may be left in the bladder, for a great length of time without producing any injurious consequences.

6. In the female, it is absolutely necessary this operation should be performed in cases of retention of urine, from retroversio uteri, and from a cancerous disease affecting the meatus urinarius. Operating through the vagina ought never to be performed.

7. *Operation through the Rectum:*—This operation is performed in the triangular space, formed by the meeting of the vasa deferentia, constituting the apex; the sides, from the vasa deferentia, as they diverge in their passage backwards; and the basis of the triangle, by the peritoneum, as it is reflected from the posterior part of the bladder to the upper part of the rectum.

When you pass your finger into the rectum, you will feel the bladder projecting into it. It is elastic, and yields with difficulty to the pressure of the finger; you will readily feel the fluctuation. This leads you to the spot where the trocar is to be introduced; the triangular space, above mentioned, is directly presented to the point of the instrument. You introduce your finger about an inch, (never less than half an inch) behind the prostrate gland, and then upon the upper part of the finger pass the trocar, which may be either curved or straight, to the posterior part of the bladder. When the point of the instrument rests upon the upper part of the rectum and the posterior part of the bladder, you pass the trocar into the bladder *obliquely upwards* and *forwards* by a slight and sudden motion of the hand. An elastic gum catheter is then to be employed. On the whole, however, though an easy operation, there are many objections, and I would not recommend it to be performed.

8. *Operation through the Perinæum:*—This operation bears a great similitude to that for stone. It consists in puncturing the bladder by the side of the prostrate gland, and is unattended with any danger of wounding the peritonæum, because it does not reach the anterior part of the bladder.

You make an incision in the perinæum, as in operation for stone, cutting down on the bulb of the penis, and drawing it to the right side. You then carry the knife within the ramus of the ischium till it reaches the prostrate gland, which you push to the patient's right side. You then carry the instrument *obliquely upwards* into the bladder, your finger resting on the prostrate gland.

9. We have now gone through the three different operations for puncturing the bladder, and although there is no great difficulty in either, I affirm that we ought to avoid all these operations, and that puncturing the bladder

for stricture in the urethra, or enlargement of the prostrate gland, is in general perfectly unnecessary.

In cases of accumulation of urine in the bladder, for which many would have recourse to puncturing that organ, I have found opening the urethra only, a better and safer course. All I do is this, I desire the patient to draw up his legs as if he was going to be operated on for stone; I then make my incision into the urethra, according to the seat of the stricture, and the result is, that the urine is passed by the perinæum, and the bladder is relieved, without being in the slightest degree injured.

DROPSY.

1. There are two species of dropsy of the abdomen:—the peritoneal or ascites, and the encysted or ovarian.

ASCITES, OR PERITONEAL DROPSY.

2. The peritoneal dropsy is an accumulation of water in the peritoneum.

The first symptoms which a person feels who is affected with ascites, is pain on the abdomen being pressed; every day this symptom becomes more and more severe; the body goes on gradually enlarging, until, at length, the person applies for medical assistance. Upon examination, it will be found that the intestines are floating in a fluid, the abdomen enlarged, (in proportion, of course, to the quantity of fluid within) and upon loosening the clothes, applying a hand to each side of the body, and gently using pressure with one hand, and slightly tapping the abdomen with the other, or giving the body a gentle sudden jerk from side to side, fluctuation will be readily perceived. As the disease advances, dyspnœa comes on from pressure produced on the diaphragm, which at length becomes a very troublesome symptom.

3. *Diagnosis:*—The difficulty of breathing, and the increase of quickness on taking exercise, the inconvenience arising from the slightest pressure by the clothes, and the gradual enlargement of the abdomen, so strongly point out the character of the disease, it is hardly possible you can form an incorrect opinion respecting it.

4. The fluid secreted in ascites is serous, but does not contain so much albumen as serum in general.

The quantity of water usually drawn off, is from twenty-five to thirty pints; but in this respect, the surgeon will occasionally find a variation.

5. *Causes:*—The most common cause is disease of the liver; it is also the result of local irritation, from enlargement of the abdominal viscera; it likewise proceeds from debility arising from fever, and from debilitating courses of mercury, the use of ardent spirits, &c.

Diseases of the liver, by impeding the circulation of the blood through that organ, by obstructing its free passage, must of necessity occasion a congestion of blood in the vessels of the mesentery, stomach, spleen, pancreas, and neighbouring parts; and, for the relief of this congestion, nature is under the necessity of effusing, from the filled vessels, the serum which we subsequently find in the peritoneum.

6. *Treatment:*—Medical treatment, when judiciously pursued, is very often successful in the cure of ascites; in the use of medicines, however, you must take care to direct their influence against *the cause* of ascites.

The medicines which experience has proved to be the most beneficial in dropsy of the abdomen, are calomel and squills: one grain of calomel and three of squills in a pill; or, two grains of blue pill, combined with three grains of squills; one of these should be taken every night, or every other night, and in the day you should give a mixture, composed of from seven to ten grains of carbonate of ammonia, one drachm of nitrous spirit of æther, twenty drops of the tincture of foxglove, and an ounce and a half of camphor mixture. These medicines will often succeed in restoring a person to health, whose constitution may be considered so broken and faulty that it may be deemed impossible for him to regain a sound state of body.

7. If the liver is the defective organ, you should endeavour to restore its healthy functions, which, in general, is easily accomplished; but when the disease is occasioned by local irritation, arising, for example, from enlargement of the spleen, you will then find great difficulty in performing a cure. If ascites arises from debility, independent of disorganization, it is readily overcome by medical treatment. When the disease has arisen from the irritation caused by ardent spirits, the medicines just recom-

mended must be relinquished, (or the complaint will not disappear,) for more active remedies.

There are other medicines which are powerful in producing an absorption of effused water, and carrying it off by the kidnies and by stool. The most active of these is *elaterium;* it is, indeed, so active, so severe in its effects, so destructive, that you must never give it to persons of advanced years, nor to those who labour under great debility. In dropsy, however, which occurs in the middle of life, where there is strength to bear its operation, this medicine will be found a most valuable remedy; but you must be cautious to commence with *small* doses.

8. When the attempts of medical treatment do not effect a cure, an operation called paracentesis, is occasionally performed, of which we shall hereafter speak.

ENCYSTED OR OVARIAN DROPSY.

9. The encysted or ovarian dropsy is a collection of water in the membrane which covers the ovarium. It is entirely local, and a person may be attacked by it who is in perfect health; indeed the health of the female may be as good when she has this disease as a man's may be when he has hydrocele, and the two diseases are somewhat similar.

After the encysted dropsy has existed for a short time, a small tumour will be perceived just above Poupart's ligament, lying upon the brim of the pelvis, in the hollow formed by the iliacus internus; no fluctuation can be perceived in it at first; as it increases, it gradually rises as high as the kidney of the affected side, it then crosses the abdomen, and fills the opposite side; it thus forms on one side, grows to a considerable size, then passes to the opposite side, and thus becomes of very considerable magnitude. There is no pain in the progress of the complaint, and the principal inconvenience that arises from it when the tumour is situated in the pelvis, is its pressing upon the bladder, and interrupting the free flow of urine.

10. The presence of fluid or fluctuation, is not so discoverable in this species of dropsy as in ascites; it is necessary to have the abdomen very much distended before it can be perceived.

There is about the same quantity of water drawn out in ovarian dropsy as in ascites, and although the swelling may occupy both sides of the abdomen, you will not find much variation in the quantity.

11. The fluid contained in the cyst of ovarian dropsy differs considerably in different subjects; so that when you operate, it is quite uncertain what kind of fluid you will find. Sometimes the cyst is filled with a number of hydatids.

In some cases it is serous, in others mucilaginous, and occasionally purulent. The fluid is sometimes so thick when mucilaginous, that it will not escape through a common-sized canula, and you are under the necessity of introducing one of larger diameter before you can succeed in drawing it off.

12. The cyst in which the fluid of an ovarian dropsy is contained, is of two species; one is formed of the membrane which covers the ovary, and the other from an hydatid which lodges upon that membrane; the ovary itself being quite unaffected.

13. *Treatment:*—I do not consider that medicines will produce any marked difference in the quantity of fluid contained in the cyst of an ovarian dropsy, because there is a deficiency of absorbents attached to that part.

You may, if you think proper, give digitalis and mercury; they are strongly recommended; but I am fully satisfied, after you have tried them, you will agree with me, that they do not possess the least power of decreasing the water of encysted dropsy.

Whether medicines are taken or not with a view of promoting the absorption of the water, I would advise you, at least, to attend to the fecal discharges.

14. When a person consults you, having ovarian dropsy, you should direct a belt to be applied tightly round the abdomen, for the purpose of producing such a degree of pressure as will diminish the tendency to enlargement.

If a person leads a sedentary life, and does not employ pressure, you will soon find that the dropsy will so increase as to require an operation; whereas, if the belt be worn, tapping may be put off almost to an indefinite period.

15. The operation of tapping has occasionally been performed with a view of merely relieving the load under which the patient has suffered, when, to the surprise of the surgeon, it has ended in a perfect cure; but, generally speaking, the vessels more commonly have a disposition

to renew the secretion of fluid, and the disease again forms.

When about to perform this operation, take care that you may not be misled, and perform your operation on a person in a state of pregnancy; you should always, therefore, previously make yourself acquainted with the state of the parts, by an examination per vaginam. By neglecting this precaution, difficulties and accidents connected with the operation often arise.

16. A question has often been started by medical men, whether the operation should be performed early or late; and in reply, I say, never early; at this time, the cyst does not adhere to the peritonæum; consequently, instead of drawing the water off, it will escape into the cavity of the abdomen. Never operate, then, until the tumour has become *fixed*, and which fact you can ascertain, by carefully watching it in different positions of the body.

There is another reason why the operation should not be performed in the commencement of the disease, which is, the cyst at that period consists of different compartments, divided by septa; as the disease advances, and as the cyst becomes larger, these septa are broken down, and the whole of the interior forms one cavity.

17. It has been proposed, after evacuating the fluid from ovarian cysts, to inject them in the same manner as we do the tunica vaginalis for the radical cure of hydrocele.

The stimulant employed should be milk. It has been done, but not sufficiently to confirm its absolute utility; but for my own part, I think the subject is really deserving consideration.

18. Removing the cyst itself, in ovarian dropsy, has also been recommended, and this I really think may be accomplished when the cysts are *small*, but not when they are large.

19. We have now gone through the two species of dropsy of the abdomen, and our next subject shall be the operation for their cure, or palliative treatment.

PARACENTESIS ABDOMINIS.

20. Whether you are going to perform the operation of tapping for ascites or encysted dropsy, never do it until you can distinctly ascertain a fluctuation, as you might otherwise endanger the abdominal viscera.

21. The operation itself is very simple; and used to be performed between the umbilicus and the spinous process of the ilium, but this practice has been abandoned for a number of years: and the opening is now made through the linea alba.

The usual mode of performing the operation, is to place the patient in a high chair, with a pail between his knees, the surgeon sitting in a higher chair: A sheet is crossed round the abdomen, the ends of which are held by an assistant, who presses the sheet tightly on the abdomen. The surgeon makes a small incision with the lancet, and introduces the trocar through the linea alba, about an inch below the umbilicus, into the part of the cyst or peritoneum only, according as it is ascites or ovarian dropsy. The water should be completely evacuated.

22. On removing the water in ascites, the patient is sometimes seized with spasms in the diaphragm, towards the close of its evacuation, as the diaphragm loses the support of the water.

A man once died on this account, from laceration with the sharp edged canula; I therefore, now use a canula *rounded* at the edge.

23. Although the operation of tapping is performed, it will not in general effect a cure. The water usually re-accumulates very shortly after; indeed, sometimes so rapidly, that some persons are said to have undergone the operation for encysted dropsy more than one hundred times.

It sometimes happens ovarian dropsy ceases to be re-produced after the operation has been repeatedly performed. In general, however, the disease returns, and there are but few examples to the contrary.

PARACENTESIS THORACIS.

1. Hydrothorax is an accumulation of fluid in the chest, characterized by every symptom of oppression with respect to the respiratory functions; for the relief of which, an operation (paracentesis thoracis) is occasionally, though very rarely, performed.

Patients usually sink after the operation; this is not surprising, because hydrothorax is the result of the diseases of the thoracic viscera, disease of the heart or lungs, and the cause remains, though the effect is removed.

2. Paracentesis thoracis, though unsuccessful for serous fluids, is not always so when *matter* has accumulated in the chest.

Matter is sometimes confined in the chest by adhesion, producing *spurious empyema*, and sometimes it is diffused through the whole cavity of the pleura on one side.

3. The marks of accumulation of pus in the chest are, considerable pain in the side, severe fever, and constitutional irritation, cough, with difficulty of breathing, inability to lie, except on the side on which the matter is accumulating, and lastly, considerable enlargement of the chest on that side.

The reason of this difference in the size of the chest, on the side affected is, that the accumulation of fluid prevents expiration on that side, and the ribs are unable to descend.

4. When the presence of matter in the chest is fully established, the patient may be relieved by the operation now under consideration.

Operation :—You draw the skin as much as possible *upwards*, and cut down with your scalpel on the upper edge of the eighth or ninth rib. Having cut through the intercostal muscles by this incision, without introducing the knife through the pleura, you pass the canula, through the pleura, and it enters the chest. The matter escapes as soon as you withdraw the trocar; and after which draw the skin down: the wound closes without danger of any further inflammation beyond the adhesive.

5. In the cases which have fallen under my treatment, I did not draw off the whole of the matter at once, but discharged it gradually, day by day.

I also found great advantage (in my last case) by fixing a girdle round the abdomen, which prevented the diaphragm from again descending by any accumulation of matter.

6. With respect to *spurious empyema*, it is merely a common abscess, which must be opened, and treated in the ordinary way.

FISTULA IN ANO.

1. Fistula in ano is a sinuous ulcer in the neighbourhood of the anus and rectum; and is a disease in which you will be called upon to operate more frequently, perhaps, than in any other.

I do not consider it a disease which is very easy to treat; it very often baffles the skill of the best surgeons.

2. Fistula in ano is more painful than a common abscess; the patient has excruciating pain in the evacuation of his fæces, dreadful tenesmus, and very often retention of urine, the pressure of the matter preventing the passage of the urine through the urethra.

3. The causes of this disease are very various; such as constipation and relaxation of the bowels; distant disease, as of the liver, or derangement of the alimentary canal; sedentary habits; and more especially diseases of the chest.

It is necessary, therefore, to enquire whether the patient labours under cough, dyspnœa, and whether his constitution is impaired. No operation will avail without attention to the state of distant parts; you may divide the sinus, but if the fistula depends on a disordered state of remote parts, the fistula will never heal without attention to the constitution of the patient.

4. There is considerable variety in the size and complication of fistulæ.

Sometimes the sinus is confined to one side of the gut; in others, half surrounding the gut; and in a third, entirely encircles the intestine. When there is an opening on each side, it is best to perform the operation first on one side and then on the other. The fistula sometimes extends to the nates, and burrows to a great distance behind the gluteal muscles.

5. Fistulæ are called *blind*, when the matter has made its way into the rectum, without making an opening externally; they are extremely difficult to treat.

6. The medical treatment of fistula in ano, will depend on their cause; if they arise from costiveness, give aperients; if from disease of the liver, give saline purges and calomel; if they arise from disease of the chest, as hydrothorax, I scarcely know what medicine to recommend, these diseases almost always produce destruction of life.

It is of great importance to give such medicines as will bring the fistula into a healthy state. With this view the balsam of copaiba may be given with great advantage: if there is much irritation give soda, which has great efficacy in diminishing the irritability of the rectum. Aromatic medicines should be given, especially the confectio piperis nigri of the London Pharmacopœia. This medicine in a very short time brings the fistula into a healing state; healthy granulations arise from the surface, and the discharge, instead of being serous or bloody, consists of good pus. Sub-muriate of mercury, with saline purges, should be occasionally given during the use of aromatics, with a view of promoting the secretion of the liver and intestines.

7. *Surgical Treatment:*—The principal of your surgical treatment consists in the division of the sphincter ani; if you do not divide the sphincter, you had better not attempt to treat the patient at all.

The operation of dividing the sphincter ani is simple in proportion as you find a ready opening into the rectum. You introduce a small probe-pointed bistoury into the fistula, pass your finger up the rectum to meet the instrument, and, carrying the point *downwards*, divide the intervening parts. If the fistula is very extensive, you will be under the necessity of putting your finger on the extremity of the instrument, drawing the knife downwards. If the fistula does not open into the rectum, you must pass the instrument up the sinus until it reaches the extremity; put your finger into the rectum to meet the knife, place it along the end of the knife, and move the rectum for some little time with your finger nail, and then, cutting through the cellular tissue, bring the point of the instrument into the rectum.

A very copious bleeding generally follows the division of the intestine; you must not, therefore, leave your patient, but endeavour to stop the hemorrhage by introducing a portion of lint into the wound. No union of the sphincter ani will take place until granulations have arisen at the parts of the wound most distant from the rectum. You should not change the lint for several days, but apply poultices, and merely introduce a probe from day to day, to see that there is no improper adhesion. If you were to put fresh lint immediately, it would excite inflammation and produce fresh abscesses in the surrounding cellular tissue. On the fourth or fifth day, you may insert a small quantity of fresh lint: healthy granulations will arise in about a fortnight, under the treatment I have just mentioned: you may then apply lint dipped in a solution of sulphate of copper.

8. A fistula in ano will hardly ever heal of itself, after the operation is performed, without the utmost attention on the part of the surgeon.

The sphincter ani is the source of the difficulty in this complaint; every time the patient has an evacuation, the contraction of the sphincter ani separates one side of the abscess from the other, and thus the process of adhesion and inosculation of the granulations is continually destroyed.

9. After the operation, the sore will often assume an indolent state, when you think it is upon the point of healing. Injections are often successful.

10. Lastly:—Fistulæ are sometimes cured by the introduction of a ligature, which gradually cuts through the part. A thread is passed through the sinus, brought out by the rectum, and tied very tightly.

Many persons will not submit to the operation of being cut for fistula, but prefer enduring much greater pain than any occasioned by the operation. In such cases, the introduction of a ligature will sometimes prove successful.

DISEASES OF THE TESTICLE.

1. The testicle, like other glandular bodies, is subject to a variety of diseases; some of which are malignant in their nature, others not so. The affections of this part, which call for surgical enquiries, are, the hydatid testicle, the scirrhous, the fungoid, the enlarged, and the irritable testicle.

HYDATIDS OF THE TESTICLE.

2. Hydatids of the testicle is a disease of no very frequent occurrence, and it affects the young (between the age of seventeen and thirty) rather than those who are advanced in years. It is confined entirely to the testicle and epididymis; and at the first glance bears much the appearance of hydrocele.

3. It begins at the extremity of the epididymis, where it joins the testicle: there is an enlargement of the part which extends through the epididymis towards the vas deferens, and from the epididymis to the body of the testicle.

The disease is never attended with pain, unless it acquires a very considerable magnitude. The spermatic cord is a little varicose, but not hard; the spermatic veins are not larger than usual. There is very little inflammatory tendency, and the patient can bear the parts to be roughly handled without pain.

4. This disease is entirely local, and unattended either with constitutional symptoms or danger; still, however, the operation of castration is sometimes required on account of the size to which the complaint arrives; the patient being unable to conceal the disease, is incapable of going into society, and will frequently entreat for the removal of the part.

It is not on account of the pain that he suffers, or any apprehensions that the surgeon need entertain, but on account of the inconvenience to which a patient is exposed, that the operation is usually performed.

SCIRRHUS OF THE TESTICLE.

5. True scirrhus of the testicle is a very rare complaint; begins in the body of the testicle, with an extremely hard swelling, which may immediately inform the surgeon of the nature of the disease. It feels like a marble body lodged within the scrotum, and it is tuberculated on the surface.

It sometimes begins in the centre of the testicle, and gradually extends until the whole is involved in the disease. The epididymis next becomes the seat of the disease, that portion being first attacked which communicates with the vas deferens. The spermatic cord becomes enlarged, and tubercles of various sizes form upon it. After the spermatic cord has become enlarged, a hard tumour forms beneath the emulgent artery, which may be felt through the abdominal parietes. In true scirrhus, the testicle does not become enlarged to any considerable size. After the swelling in the loins, the thighs become enlarged, and œdematous on the side of the disease, which arises from the obstruction to absorption; and the pressure on the veins may also have influence in producing this effect.

6. *Diagnosis:*—In hydatids of the testicle, the health is not affected; but in the present disease, the countenance undergoes a remarkable change; it is yellow, and sunk, a fixed colour terminates abruptly in the cheek; the disease is also attended with excruciating pain, which becomes more intolerable as the complaint advances. It is generally from a year and a half to two years before the disease destroys the patient.

When you cut into a swelling of this kind, you will find it composed of a considerable number of lobes; and cartilaginous substances, and earthy matter, are frequently deposited in the testicle.

7. *Treatment:*—The operation of castration for this disease, is extremely unsuccessful, for it rarely happens that the complaint does not return after the removal of the scirrhous testicle.

This may arise in some measure from the late period at which patients usually apply for relief. If the spermatic cord has not become enlarged, you may, by giving the patient alterative medicines for a length of time, succeed sometimes in preventing the return of the disease after the operation; it is, however, an operation which is in general even less successful than that for scirrhous tubercles of the breast. I have never performed it after the spermatic cord has become enlarged, because I know that the disease will be sure to return.

FUNGOID DISEASE OF THE TESTICLE.

8. This disease is much more common than the last; it begins, like true scirrhus, in the body of the testicle; but, unlike that disease, it almost immediately affects the whole body of the testicle at its first commencement.

In a very short time, the epididymis becomes affected; next the spermatic cord; and, in the course of a very few weeks, a tumour forms in the loins. The disease is at first unattended with pain; but when the spermatic cord and the tumour in the loins become of great magnitude, the patient suffers considerably.

9. The fungoid swelling of the testicle sometimes increases to the weight of several pounds; and usually occurs between the age of seventeen and thirty-five.

The appearance of the surface is somewhat livid; the spermatic cord is loaded with blood, and in some parts you may feel a fluctuation, as if there was a cyst within it: it also becomes covered with tubercles of considerable size.

10. The tumour has a soft pulpy feel, readily yielding to pressure; and on the first examination, you might suppose the disease to be hydrocele.

It may be distinguished from *hydrocele* in the following manner:—In the first place, it is flattened on the fore part, whereas in hydrocele it is pyriform; if you squeeze any part of the fungoid tumour, the patient will complain of the pain arising from the compression of the testicle, which he will not do in hydrocele, unless you squeeze the posterior part of it: the fungoid tumour rather yields to the pressure of the finger, than fluctuates from one side to the other, as in hydrocele; and lastly, the great weight of the swelling when you lift up the sides, and the livid appearance of the scrotum, mark the malignant character of this disease.

11. The true fungoid disease is not confined to the testicle, but affects other parts of the body in a great variety of situations.

If you take blood from a person under this disease, you will find it so attenuated, that it will hardly coagulate; and if you have an opportunity of seeing the adhesive process, you will find the inflammation scarcely supporting blood-vessels: what few vessels are pushed through the part, assume the appearance of fungus.

12. The scirrhous and fungoid tumours are the only malignant diseases to which the testicle is subject. The operation of castration may be performed with a hope of success, if the patient be entirely free from other complaints, but, in a great majority of the cases which I have seen, the disease has returned.

There are, in general, tubercles of a fungoid character in other parts of the body, which destroy, notwithstanding all that can be done by alterative medicines, after the operation.

13. By the exhibition of alterative medicines, so as to improve the general health, you may probably prevent the disposition to the formation of the disease; but when the scirrhous and fungoid diseases are once engendered in the constitution, we know of no medicines to counteract them.

Knowing this, do not go over the same treatment, which experience has shown to be ineffectual, but try, amidst the great variety of new powers with which the discoveries of modern chemists have furnished you, whether there are not some more worthy of your attention.

CHRONIC ENLARGEMENT OF THE TESTICLE.

14. This complaint is merely a chronic enlargement, occurring in constitutions which have been injured by intemperance and over-excitement, as from the use of mercury, or the presence of a stricture; the tumour is hard, and although very often mistaken for scirrhous or the true fungoid testicle, it is extremely easy of cure.

This disease is of a similar nature to that which attacks the eye, which has been called iritis, and requires the same mode of treatment.

15. Unless medical treatment is adopted, the complaint will increase until the testicle is destroyed; but by a judicious application of your remedies, you may readily overcome it.

You must *strictly* enjoin him to keep the recumbent posture; apply leeches to the part occasionally, and evaporating lotions; and desire him to take three, or even five, grains of calomel with opium, every night and morning. If he does this, the enlargement of the testicle will subside in the course of a few weeks.

16. Do not on any account attempt to introduce a bougie, even though the state of the urethra should be the source of the enlargement.

The introduction of a bougie at first would only add to the irritability of the urethra: wait till you have altered the constitution by the means I have pointed out, and the swelling of the testicle is considerably reduced; and then, but not until then, you may resort to the use of the bougie with advantage.

17. Although the disease upon which we are now speaking, may be effectually cured by medicines, there is a chronic enlargement of the testicle which requires the operation of castration, as large abscesses are sometimes produced by it, which occasion great pain, and the patient becomes anxious for its removal.

Fungoid granulations spring from the surfaces of these abscesses; they are not of the true malignant fungoid character, but they resemble the granulations which spring through the dura mater, in consequence of injury to the brain. Even in this case, however, the granulations may be cut off from the surface, and the integuments brought together, so as frequently to render the removal of the testicle unnecessary. I have seen a case cured by sprinkling powdered sulphate of copper, or nitrate of silver, on the part.

IRRITABLE TESTICLE.

18. The irritable testicle is a very formidable disease, and generally resists all means which may be employed to subdue it. The part is so extremely tender, that the patient cannot bear to walk, as pressure of the testicle gives him excruciating pain.

The moment you touch the part, the patient shrinks from you, and complains of dreadful pain, which will last for some hours. The pain passes up the spermatic cord to the loins, entering along the spermatic nerves of the thigh.

19. The degree of suffering to which a patient is exposed from an irritable state of testicle, can scarcely be conceived. It is for the most part unmanageable by medical treatment, but will, after a great length of time, sometimes wear itself out.

It may be relieved for the moment, by giving the blue pill with hyoscyamus, but it generally returns, and will continue for months, and even years. The patient lies on the sofa from morning till night, and is wholly unable to pursue any occupation. Sea-bathing may prove beneficial.

20. We have now gone through the different diseases of the testicle, and we will next proceed to speak of the operation, which we are occasionally called upon to perform, for the radical cure of some of them.

CASTRATION.

1. This is one of the most simple operations in surgery; but before it is undertaken, be cautious that the disease does actually require to be removed, and particularly bear in mind the circumstances which should regulate its removal.

You grasp the testicle in your left hand: begin your incision at the upper part of the abdominal ring, and extend it to the lower extremity of the testicle. Lay bare the spermatic cord completely at the abdominal ring; and put a needle and ligature through it and the artery of the vas deferens. Having divided the cord, you draw it towards you, and detach the cellular membrane behind it: in this consists the whole of the operation. The spermatic artery, the artery of the vas deferens, and several in the scrotum, are the vessels which require securing.

In making your first incision, you must not leave any part of the scrotum undivided, for if it is not carried to the lower part, a bag of matter will form, and the healing process be thus prevented.

AMPUTATION.

1. Operations are much less frequent than formerly. Many accidents, for example, where the parts are much lacerated, and for which our ancestors would have operated, we leave to nature, by whose influence the different reparative processes will be set in action, and the injured limb restored to health and utility.

When amputation is necessary, nature will occasionally even perform this operation, unassisted by art, by the process of mortification.

2. Diseased joints used very frequently to lead to the performance of amputation, in young persons, as well as in the old; but in the present day, it is by no means frequently resorted to.

Even diseases of the joints of the upper extremities of children, give rise to amputation much less frequently than in the days of our forefathers.

3. With respect to diseases of the ancle and knee joints, amputation is still very commonly performed; and for such complaints, it is occasionally necessary both of the leg and thigh.

4. For compound fractures we rarely operate directly; they are seldom so severe as to require it, and it is not until gangrene or disease of the bone has taken place, that an amputation is deemed necessary.

From the superior manner in which compound fractures are now treated, they do much better than formerly; and very severe injuries of this description will often terminate most favourably.

5. In all cases before you amputate, it is necessary that you should stop the circulation of blood, by applying in such situations where it can be accomplished, the *Tourniquet*, an instrument which consists of a strong band, capable of completely surrounding the thigh, two brass bridges, a long screw, a pad, and two small rollers.

The tourniquet, in operations where it can be used, will be found of very great service; it will more effectually control the circulation than pressure by the hand.

6. The situation of the tourniquet must necessarily depend on the place where you intend amputating. In the upper extremity, if you operate below the elbow, let the tourniquet be applied on the middle of the arm; if above the elbow, not lower than one third of the arm downwards.

If you amputate *above* the elbow, it should be fixed as near the axilla as possible; this will afford you room for dissecting back the integuments, and at the same time will allow of the retraction of the muscles. If you amputate *below* the elbow, the instrument should be applied about the middle of the arm on the inside of the biceps muscle.

7. When you amputate below the knee, you should fix the instrument on the middle of the thigh; and if you

amputate above the knee, you must then fix it one third of the way downwards.

In the first case, the pressure is immediately on the artery, at the inner side of the sartorious muscle; and the motive of the last situation is nearly the same as for amputation above the elbow.

OF THE FINGER.

8. *Second and Third Joints:*—We now very rarely amputate at either the second or third joint of the finger, because we find that it is far better to remove the entire finger, either at the first joint, or even at the metacarpal bone behind the first joint, as the stump necessarily left, is found very inconvenient to the patient.

Amputation of the finger at the second or third joint:—Having felt for the joint, you make a circular incision a little below it, through the integuments; this is the first step: you then make a cut through these at each side of the joint; you then turn up and back the flaps thus produced, when, upon dividing the ligament with the scalpel at one side of the joint, you immediately open it, carry the knife through, and divide the ligament on the opposite side. In this way the finger may be removed; the flap laid over the bone, aud a good stump be formed.

9. *First Joint:*—This is also an operation which we do not perform but to satisfy the wishes of our patient, as it leaves a very unpleasant deformity of the hand.

The finger is to be drawn aside; you then make an incision obliquely through the web situated between them, and carry your cut just beyond the knuckle; the knife is then to be carried through the joiut from side to side, leaving a flap of integument sufficient to cover the end of the bone.

10. *Metacarpal Bone:*—The best mode of amputating the finger, is to saw through the metacarpal bone a little above the knuckle. The two fingers which are next the diseased one, may thus be made to approximate, and if kept in that situation until adhesion of the integuments has taken place, very little apparent deformity of the hand will be produced.

In this amputation, it is better to make your oblique cut through the web longer, so as to carry it beyond the joint some way up the metacarpal bone; you then make a circular incision on the other side of the joint, and having cleared the bone from its muscular and ligamentous attachments, you saw through the metacarpal bone itself.

11. *Metacarpal Bone of the Thumb, &c:*—The removal of the entire metacarpal bone of the thumb, is an operation sometimes required, as also of the entire metacarpal bone of the little finger.

To accomplish the first, you make your incision by cutting through the integuments at the inside of the thumb, nearly opposite the first joint; you carry this incision backward to the union of the metacarpal bones with the carpal bones: this incision will form a flap, consisting of integuments and the abductor muscles, quite sufficient to cover the wound that will be occasioned by the operation. After having completed this flap, the knife is then to be passed backward from between the index finger and thumb as far as the trapezium, to which bone the head of the metacarpal bone is articulated; when you arrive at this position, you are to turn the knife, so as to make its blade form a right angle with the incision just made; you are then to carry its edge through the joint, by which the ligament will be divided, and the bone is thus removed. The flap which is formed principally of the abductor pollicis and the integuments, is quite sufficient to cover the wound.

12. The metacarpal bone of the little finger is removed by nearly a similar operation.

You begin your incision at the web between it and the ring finger, carry it down to the articulation with the unciform bone, pass it through the joint, and then let it terminate upon the outside of the metacarpal bone, opposite the part where you commenced your first incision; a flap will be thus formed of muscles and integuments, in the same way as the flap in the thumb operation; straps of adhesive plaster are to be employed for the purpose of keeping the edges of the wound together.

13. The vessels required to be secured in amputating fingers, are the two digital arteries.

OF THE TOES AND FOOT.

14. *Toes:*—The operation for the removal of the toes is so similar to that of the fingers, that I do not consider it necessary to say much to you on the subject.

You must not expect to find the first joint of the toes at the same distance from the web as in the fingers; you must, therefore, in the toe operation, carry your incision between the web for at least an inch and a half, before you will be opposite to the joint. The other steps of the operation, are the same as for the removal of a finger.

15. *Foot:*—A new operation has of late years been proposed for the amputation of the foot at the tarsus, by cutting through the joint, formed by the astragalus and os scaphoides, and the os calcis with the os cuboides. I am of opinion, however, that it is much better to saw through the os naviculare and os cuboides than to entirely separate these bones at their articulating surfaces.

In the last mode of operating, there will be much less inflammation, much less suppuration, less risk to the patient, and, at the same time, a much greater chance that the integuments will unite by the adhesive process. It also will afford the patient a better bearing for the body, as more of the foot will be left.

OF THE LEG.

16. *Flap Amputation:*—The flap amputation of the leg, is usually performed a little above the ankle joint, about two-thirds of the length downwards. It is performed with a view of enabling the person to wear an artificial leg; and in those individuals who do not require them to obtain their food by labour, it may succeed and answer the object in view; but for those who, by their industry and muscular exertions, have to obtain their livelihood, it does not succeed.

Operation:—You push the catling through the integuments and muscles of the back of the leg, (about two-thirds of the length downwards,) and carry your incision downwards; when you consider the knife has passed sufficiently far, you are to make it cut its way out immediately at the back of the leg, and let the termination of the flap be of a semilunar shape; it will then correspond to the form of the wound, to which it will afterwards be applied, viz. the upper part of the stump. A circular incision is now to be made over the leg, so as to meet the incision where the catling first penetrated, and you remove the limb by sawing through the bones.

17. There are two other important objections to the flap amputation; the one arising from the difficulty of healing the stump, and the other from the great difficulty in securing the vessels if hemorrhage follow the separation

of the ligatures; it is therefore, an operation which it will be prudent in you to avoid performing.

18. *Leg Amputation below the Knee:*—In amputations below the knee, if its condition will allow of it, the bone should be sawed through four inches below the point of the patella; when you cut through the integuments, your incision should be made with a view of saving two inches of these for the purpose of covering the stump; the quantity, however, is to be regulated according to the size of the limb; and, in accidents where the parts have not been reduced by previous disease, four inches frequently will not be too large a portion.

19. Your principal object should be to save integuments, and not muscle: to preserve muscle for the purpose of covering the stump, in these amputations, is an exceedingly false and injurious surgical principle: if you save muscle as well as integuments, retraction will take place, and the stump, consequently, will not heal near so kindly as it would have done provided you only preserved integuments.

Operation:—Take the handle of the knife between the finger and thumb, and divide the integuments; (they have two places of adhesion, viz. over the tibia, and over the fibula;) having separated these, and likewise the connecting cellular membrane, the skin is now loosened to the extent of two inches, which quantity will be sufficient to cover the stump. In amputating, I generally use but one knife, so that I divide the muscle, intercostal ligament, and periosteum, with the same instrument. I therefore commonly use, in amputating the leg or arm, the catling only. Take care to divide the muscles extremely well, so as to prevent any of the fibres being torn by the teeth of the saw; for they not only impede the action of the saw, but render the operation painful and clumsy. The splintering of the bone is to be avoided by a steady position of the limb, and by causing the oscillations of the saw to stop short at the moment when the bone is nearly cut through. The vessels to be secured are the anterior and posterior tibial arteries, and sometimes the anterior and posterior interosseal; in tying the posterior tibial artery, take care not to include in the ligature, the nerve which accompanies it. After having applied your ligatures, cut off one end of each, and let the remaining ends hang out together at the bottom of the stump; straps of adhesive plaster are then to be applied over the integuments, some longitudinally, and others perpendicularly, for the purpose of making it circular. These longitudinal and perpendicular straps should be secured in their situation by a strap applied over them, and around the limb, so as to retain the first straps that were applied in their proper situation. The cooler the stump is kept after the operation, the better; there will be less danger from hemorrhage, and less chance of the suppurative inflammation taking place: the adhesive is what we want, and this you will be most likely to obtain by keeping the stump in as cool a state as possible.

No rollers are applied to stumps by surgeons of the present day: no tow, no flannel caps, as there were formerly.

As to the time for removing the dressings; on the sixth day you may take away one strap, for the purpose of permitting any pus that may have collected, to escape; and on the eighth day you may remove the whole of the straps, substituting for each, as soon as taken off, a fresh strap of the same kind of plaster.

OF THE THIGH.

20. In amputating above the knee, you must endeavour to make your incision through the muscles, in such a manner as to prevent the stump from becoming of a conical shape at a subsequent period. You should also let your incision be at least an inch and a half above the patella, on account of wounding the bursæ mucosæ situated just above that bone.

Operation:—After having made the incision through the integuments, and dissected them back, as far as may be thought necessary for the purpose of covering the stump, you are then to cut through the superficial set of muscles, and divide the deeper seated muscles situated immediately round the bone, at least two inches higher up than the spot at which you commenced your incision through the superficial set of muscles; this will prevent the formation of a conical stump. The superficial muscles will contract, but the deeper ones cannot, on account of their connection with the bone. The arteries which require securing are, the femoral, profunda, and that branch which runs in or by the side of the sciatic nerve.

In dressing this stump, it is generally advisable to apply a roller next to the skin, in consequence of the spaces which exist between the muscles at the end of the stump; the ligatures are then to be placed at the most depending part, and straps of adhesive plaster put on in the same manner as for amputation below the knee, leaving a small aperture for the escape of matter, should any form.

OF THE HAND.

21. Amputation of the hand, at the wrist joint, is not unfrequently required, in consequence of extensive lacera-

tion of the metacarpus; but let me observe, that if any one of the fingers or the thumb remain, it is better not to amputate the hand, as a single finger is often exceedingly useful after injuries of this kind.

In performing the operation at the wrist, you are first of all to feel for the styloid process of the radius; it is better to make a semi-circular incision on the back of the wrist, and a similar incision on the under side, so as to reach the styloid process of the radius, instead of making at once a circular cut. It is of importance that sufficient integuments should be left to cover the joint completely; then depress the hand a little, and cut through the transverse ligament of the wrist. The radial and ulnar arteries are the only vessels which in general require to be secured. The operation is easily performed, and leaves a very neat stump.

OF THE ARM.

22. *Fore-arm*:—The amputation of the fore-arm a little above the wrist, is a very dangerous operation; because you are under the necessity of cutting through a great number of tendons, which suppurate and form extensive abscesses along the arm.

It may be said that you cut through some tendons in amputating at the wrist joint; this is true, but at the wrist joint they are so bound down by ligaments that they do not suppurate after the operation; and there is skin enough to cover the extremity of the joint, which unites by the adhesive process.

In amputating the fore-arm, you make your incision one-third of the way down; make a double flap, one on the inside and the other on the outer side. In sawing through the bones, take care to saw both at the same time. The radial, the ulnar, the anterior and posterior interosseal, are the four vessels which requiro securing. A very good stump is left in this amputation.

23. *Upper-arm*:—The amputation of the upper-arm is similar to the operation of amputation above the knee.

In amputating above the elbow-joint, *two* circular incisions will be sufficient; one through the integuments, and a second through the muscles down to the bone; having well freed the bone from muscle, you will proceed to divide it by the saw. The principal artery to be secured is the brachial.

SHOULDER JOINT.

24. The amputation at the axilla is a very simple, and, comparatively speaking, a very safe operation. The joint heals as well and as quickly as after amputation at the middle of the arm.

The French, in performing this operation, make a flap before and behind the joint; but in this country we do not. Place the patient in a chair, slit up the deltoid muscle, and introducing the knife, make a flap from the head of the os humeri; it is better not to make the other incision through the integuments until you have dislocated the head of the bone from the socket. The next thing you have to do, is to cut into the joint, dividing the capsular ligament, the head of the bone is easily dislocated from the socket. Carry the knife in a circular direction, and put your finger on the artery while you are turning the head of the bone from the socket. There is no necessity for a tourniquet in this operation; a finger may be put on the artery while you are making the flap; but even this is unnecessary, for all that is required is to divide the artery last, and put your finger upon it at the moment of dividing it. This is the only artery to be secured.

25. The readiness with which the wound will heal after the operation, will depend upon the integuments being sufficient to cover the whole of the cartilaginous surface, and upon the constitution of the patient. If the constitution is not good, there will be danger of suppurative inflammation.

I have never known a patient die from the operation, but I have heard of cases in which the patient has sunk from hemorrhage, caused by sloughing of the artery some days after amputation.

HIP JOINT.

26. The amputation at the hip joint, has been so often performed with success, that it may now be considered as one of the established operations of surgery; but, for my own part, I do not consider it should be done when you can saw through the trochanter major.

When the acetabulum is laid open, great constitutional irritation is produced by the suppurative process; abscess after abscess arises, and the life of the patient is put into imminent danger; whereas the amputation through the trochanter major is attended with very little risk.

27. As this amputation is of no frequent occurrence, I shall not detail the steps of the operation, but here close the different amputations, and proceed to speak of the treatment of stumps.—*Ed.*

TREATMENT OF STUMPS.

1. In amputating a limb, your object is first to preserve sufficient integuments to cover the ends of the bone.

That which you preserve should be integuments, and not muscles, for if muscular fibres are preserved with the integuments, they will contract, and retraction of the skin covering the stump will be the result.

2. When the limb has been removed, you should apply ligatures to the bleeding vessels; and let them be small and consist of fine silk, for nothing is so bad in operations as coarse ligatures, excepting, perhaps, in cases where ossification of the arteries has taken place, when they would be justifiable.

I would not advise you to tie every small vessel; ligatures on the principal arteries are quite sufficient; and the fewer applied the better; for though it is desirable to prevent the disturbance of the limb afterwards, yet, by waiting a short time after the operation, the smaller arteries will generally stop bleeding.

3. There are two reasons why thin ligatures are best: first, because they are less liable to escape; and secondly, they divide the internal coats of the artery more effectually.

When you use a very fine ligature, the internal coats will be completely divided, and the external one will remain entire. Thick ligatures prevent the wound healing so quickly as thin ones. You are to cut off one of the ligatures close to the vessel, and let the other hang out of the wound.

4. When the limb is amputated, and the vessels secured, the sponge should be applied, and all coagula of blood removed, as this is very essential to the union of the part; for if they are not taken away, they will only act as extraneous bodies, and keep up irritation.

After amputation, having disposed your ligatures in a line with each other, and leaving them to hang out at the most depending part of the wound, all that is necessary to do, is to apply your adhesive straps and other bandages, if necessary; if the weather be hot, to apply the spirit of wine and water lotion; and if it be cool, to keep the limb quiet. The object is to keep down the inflammation to the adhesive stage; if it goes beyond this, suppuration will be the result.

5. The last circumstance necessary to mention, is the impropriety of dressing the stump too early. In six or eight days after the operation, it will be proper to dress the stump, but to do it before, would be hurtful. All you ought to do is, in four days after the operation, to remove one strip of plaster for the purpose of letting out any matter which might have collected.

HÆMORRHOIS, OR PILES.

1. This is a complaint about the rectum, of a very common occurrence, and is, in the first instance, a distention of the hæmorrhoidal veins, forming small tumours either within the anus or at its verge.

There are three different states of the rectum under this disease:—first, as it is affected by external piles; secondly, by internal piles, accompanied by prolapsus ani; and thirdly, by excrescences.

2. Piles are either *external* or *internal;* that is, they are either situated in the rectum itself, or they emerge from the anus and become external.

In some cases they are attended with a discharge of blood, particularly when the patient goes to stool, called the *bleeding* or *open piles;* in others there is no discharge, when they are denominated the *blind piles.*

3. *External Piles:*—There are characterized by pain in passing the fæces, and tenesmus after the discharge. On examination of the anus, you discover a projection of a livid appearance, which, in two or three days, becomes so solid as not to yield to pressure.

In piles, the blood is coagulated in the hemorrhoid veins; after a time, the veins become affected, the patient feels uneasiness in going to stool, and observes that his fæces are tinged with blood. In a short time, the pressure of the fæces, on the internal part of the rectum, brings down the pile, so that it becomes external. The intestine is brought down in this way, every time the patient has a motion, and he is under the necessity of pressing up the part for some time, in order to return the rectum into its original situation.

This state of affairs continues for some time, till at length inflammation comes on, which adds greatly to the patient's suffering, and he is often unable to return the rectum when it has descended. A piece of lint, dipped in oil, should be applied, when a considerable bleeding takes place from the pile or piles. There is sometimes a discharge of matter, and now and then the piles become ulcerated.

4. With respect to the treatment of external piles, and it must depend upon whether the tumours have existed for a short time or a longer period.

If you are consulted for external piles, and find a little livid projection at the anus, which has existed only for a short time, and yields readily to pressure, you should give some active aperient, avoiding carefully, however, any purgative which has a particular influence on the rectum, as for example, aloes. You should give castor oil, or sulphate of magnesia, with infusion of senna, so as to produce a copious secretion from the intestines. In addition to this, you may apply leeches to the part. The best local application is the liquor plumbi subacetatis dilutus. In this way, you will generally succeed in getting rid of the disease in this stage.

5. If the pile has continued till it has become solid, you will then pursue a different plan.

Put the point of your lancet into the pile, just puncturing the part and squeezing it between your fingers, you will press out a clot of coagulated blood. When the pile has become diminished, and the vein ceases to be swollen, the liquor plumbi subacetatis dilutus, with a purgative, will get rid of the disease.

6. *Internal Piles:*—Internal piles commence by a sense of weight and pain in the sacrum; you are seldom consulted, however, until the disease shows itself by prolapsus ani.

Prolapsus ani is to be considered as the effect of internal piles, and this effect will scarcely cease until the causes of it are removed. You may diminish it in some measure by astringent applications, and it is right to try to do so, but you will seldom ultimately succeed. With this view, when the part has descended, you may use decoction of oak bark and alum, injecting in the rectum, (with a common gonorrhœa syringe,) two grains (which may be gradually increased to four) of alum, in an ounce of the decoction of oak bark. But this treatment will seldom avail when the disease has advanced to any considerable extent; the only way of affecting a cure in such cases, will be to remove the piles.

7. Internal piles are accompanied with a higher degree of fever than the external; they are covered with adhesive matter surrounding the rectum, and the sphincter ani is affected with spasmodic symptoms.

8. In these cases you must endeavour to allay the irritation by local and general treatment; if the inflammation continue for a considerable time, you must give an aperient once in three or four days, but it must not be oftener repeated.

Free purging must not be done; apply leeches, fomentations, and poultices, to the parts, and take away blood from the arm. Sometimes internal piles undergo a natural cure.

9. If the means you have thus adopted do not answer your expectations, you must remove the piles by ligature; I say ligature, because experience tells me they are safer than excision by scissors.

The application of a ligature is exceedingly painful, if it be drawn tightly; it should only be applied so as to interrupt the circulation, and destroy the life of the part, without exciting much pain. Leave the ligature on the part; but if the pile be of considerable size, as the ligature is apt to slip, more especially if the peduncle be large, a straight needle, threaded with a double ligature, should be passed through the centre of the pile, and tied on each side. This will excite little pain, and prevent the ligature from slipping off. The time in which the ligatures come away, is from five to six days.

The recumbent posture must be enjoined, and the patient kept as quiet as possible, so that the circulation may not be hurried.

10. *Causes of Piles:*—They sometimes arise from costiveness, and the pressure of the hardened fæces on the rectum; and are very often the consequence of long-continued diarrhœa: so that, opposite causes occasionally produce the same effect.

Piles very often arise from disease of the liver, and congestion of the veins in the intestinal canal. The difficulty of transmitting the blood through the vena portæ, occasions a congestion in the hemorrhoidal veins; and obstructed secretions in the intestinal canal lead to the same effect. Piles are also very common in persons subject to phthisis pulmonaris.

11. *Hemorrhoidal Excrescences:*—When piles have existed for a considerable length of time, excrescences are produced in consequence of inflammation. They are the remnant of the piles, and possess a high degree of vascularity.

The mode in which these excrescences are produced is as follows:—The inflammation of the pile, glues the sides of the veins together; adhesive matter is thrown out, which becomes organised, and a hard swelling, in which there is a number of vessels, is produced. These excrescences project from the surface a little way up the anus, which is chafed and rendered extremely irritable from this cause.

12. As these excrescences merely form portions of projecting skin, although so exceedingly vascular and irritable, they may be removed by excision, without the least hazard.

13. With respect to the still further treatment of prolapsus ani, as that remains for some time after the removal of the piles, the best plan is to inject astringent lotions into the intestines, and to apply the unguentum gallæ to the part.

If the prolapsus prove obstinate, you may make a little incision by the side of the sphincter ani, with a view of producing the adhesive inflammation, so as to glue the rectum to the cellular tissue surrounding it. This cannot, however, be done without danger in certain constitutions.

POLYPI OF THE RECTUM.

1. Most mucous surfaces produce polypi, and the rectum among others. Polypi of the rectum generally occur in children, and very rarely in adults.

The way I would recommend you to remove them, is to draw them down, so as to bring into view the part of the rectum from which they spring, and when this part is brought into view, to put a ligature round them, and remove the part below the ligature with a pair of scissors.

NASAL POLYPI.

1. There are four different species of polypi of the nose; the first and most common, the gelatinous; the hydatid, the carcinomatous, and the fungoid.

2. *Gelatinous Nasal Polypi*:—Polypi of this description grow from a narrow peduncle, are composed of a very soft substance, resembling jelly, (hence their name,) and are very slightly vascular.

A polypus of this kind, is yellow and transparent, very thinly streaked with vessels which are never sufficient to give it a red appearance. It hangs from the schneiderean membrane by a small peduncle, therefore loose in the nose, and if you stand opposite the patient, and he draws in and forces out his breath through the nostrils, you will then be able to see it advance, and again retreat, (if not too large) to the posterior nares. It generally has its origin in the middle chamber of the nose, between the superior and inferior turbinated bones.

3. Polypi of the nose, of the gelatinous description, often acquire a very considerable magnitude.

When this is the case, they extend into the posterior nares, and often hang over the edge of the velum pendulum palati, so that you can frequently see them at the back of the mouth; and if they are not quite so large as to allow of this, they may be distinctly felt on passing back the finger.

4. The remedy for these polypi is extraction by means of forceps; and you must bear in mind, that unless the points of the forceps are applied near their bases, you cannot expect to be successful in extracting every part of them; consequently, they will again form, and the operation be again required.

The forceps which you should employ, are long, and have small points, the insides of which points or blades are made rough to prevent their slipping from the peduncle, and thereby losing their hold.

The manner of using the forceps is this; pass up a probe in a direction between the superior and inferior turbinated bones, and feel for, and ascertain the precise situation of the peduncle. Having satisfied yourself of the situation of the peduncle, with the probe, then let it remain as a director for the forceps, and having carried the points of the forceps to the peduncle, thus guided by the probe, seize the peduncle and tear it off by a *sudden jerk* of the forceps: by adopting this mode, polypi may be effectually removed.

5. If the person should be very young, and the nose small, you may remove the polypus with a pair of forceps similar to such as are contained in our common pocket instrument cases; if, however, the polypus should grow far back, then you will succeed best with the forceps just named.

Sometimes I take away polypi by merely using a pair of probe pointed scissors. After cutting through the peduncle, if you desire the patient to blow his nose, the air will force it out of the nostril; but I should tell you, that when thus removed, they are more likely to return than when extracted with forceps, because you do not here take away the pituitary membrane, and this is the source from whence these polypi arise.

6. When the polypi extend into the posterior nares, and are very large, so that they can not only be felt, but frequently seen, different forceps and mode of operation is necessary for their removal.

The forceps for such a case should be exceedingly curved. They should be passed to the back of the mouth, then their points or blades are to be carried up the posterior nares, when, having satisfied yourself (in the manner lately directed) that you have hold of the peduncle, you are to break it off by moving the forceps in a direction *downwards* and *backwards*.

Another way, when the polypus is large, and when the peduncle grows from the side of the antrum, is to divide it by means of a pair of curved scissors, and then with your finger, hook down the polypus at the back of the mouth, from over the velum pendulum palati: in this way it falls into the throat, and produces a sensation of choaking: retching is the consequence, and the polypus will be thrown upon the floor before you.

7. If after the removal of a gelatinous nasal polypus, you think any portion remains, you should, by means of a probe, pass up a piece of lint to the spot, to prevent any annoyance from hemorrhage.

The lint, previous to its introduction, may be dipped in a solution of alum; indeed, where patients have objected to have this polypus removed by the forceps or scissors, it has been recommended to use injections of solution of alum, and of the oxymuriate of mercury.

8. *Hydatid Nasal Polypi*:—These are formed by a collection of hydatids, and have the appearance of bags or bladders of water; with these there is generally a copious serous discharge. They are usually found in young persons.

The peduncle of this species resembles the cord formed from the placenta; it is composed of thin fibres or films, which form the covering of the polypus, and these converge to form and complete the peduncle.

9. The best plan of treatment you can adopt for these cases is, daily to touch the polypus with the muriate of antimony.

This should be carefully done by means of a camel hair pencil, for a very few times will be sufficient. It acts chemically, and quickly destroys the tumour.

10. *Carcinomatous Nasal Polypi*:—These have similar symptoms and appearances to scirrhous tumours in other parts of the body, are painful at intervals, ulcerate, and during this stage occasionally bleed. They are commonly met with in old persons.

They are usually attended with severe pain across the forehead, in the situation of the frontal sinuses; the passage of the air through the nose becomes obstructed from the size of the swelling; the tumour also presses upon, and occasionally obliterates the lachrymal sac, preventing the natural course of the tears, thus giving rise to the inconvenience and symptoms of fistula lachrymalis.

11. In this complaint all that you can do will only amount to tranquillising nature. It is a malignant affection, and will ultimately destroy life.

As regards internal remedies, you may give opium in such quantities as shall have the effect of lessening the dreadful pain. Belladonna and opium, also conium, may be applied to the part; and if the inflammation should be severe, you may apply leeches in the vicinity of the nose, together with evaporating lotions.

12. *Fungoid Nasal Polypi*:—These are characterized by the general symptoms of fungoid disease in other parts;

and their extensive adhesions preclude the success of their removal, either by the forceps, with scissors, or by ligature.

In either case, the operation will be useless, and what is still worse, will do injury, by exciting irritation, whereby the disease becomes aggravated. In these cases, I shall in future try what effect will be produced by the muriate of antimony.

ENLARGED PITUITARY MEMBRANE.

1. This complaint consists of red projections from the nostrils, which are merely an enlargement of the pituitary membrane, and not unfrequently occurs with young children, and as it bears some resemblance to polypi of the nose, you must be upon your guard.

Be assured when you observe these red projections in the nostrils of young children, that they are not polypi; the disease is merely an enlargement or thickening of the pituitary membrane.

2. In these cases, there is no necessity for any operation: all you have to do is to touch the projecting parts, by means of a small bougie formed of nitrate of silver: from this application, they will in a short time turn white, and very soon disappear altogether.

ENLARGEMENT OF THE TONSILS.

1. Enlarged tonsils are generally the result of one of the diseases common to children, as the small-pox or measles; and the inflammation which produces them, is of the scrofulous kind.

Children will be brought to you with swellings in their throats, and it will be stated that they have great difficulty of breathing, sleep with their mouths widely distended, the skin at the same time being covered with a profuse perspiration. Upon feeling the throat, looking into the mouth, or passing back the finger, it will be readily ascertained that one or both tonsil glands is enlarged. Sometimes the enlarged part is attached to the gland by a distinct small peduncle; at other times, the base of the swelling is of considerable size.

2. The treatment you are to pursue, is both a constitutional and local plan.

3. *Constitutional Treatment:*—To prevent the growth of these enlargements, and their formation altogether, the best medicine that can be given is the oxymuriate of mercury, combined with the tinctures of bark and rhubarb.

A very good formula is one grain of mercury, in an ounce each of tincture of bark, and tincture of rhubarb. A teaspoonful to be taken in a little white wine, twice or three times a day, according to the age or peculiar state of the patient. By this medicine you will improve the appetite, strengthen the stomach and bowels, and gradually restore the vigour of the constitution.

4. *Local Treatment:*—The application of the nitrate of silver will often succeed in getting rid of these tumours, as also the sulphate of copper, and even alum; but the first is the medicine generally selected.

In order to apply it, you are to press down the tongue with one finger, then holding the nitrate of silver in its ivory case, between the finger and thumb of the other hand, gently apply it to the surface of the swelling. The application may be repeated, if necessary; where the caustic is applied, the part will soon become white, and scale off. A succession of these, produced by a succession of applications, will often effect a cure.

5. When the tonsils are too large to admit of cure, by the plans already described, or when they resist the proposed methods, you must remove them *by ligature.*

It is easily applied, and may be done by first passing it through the eye of a probe, (previously curved for the purpose) then carrying it over the tonsil, and bringing it out below, tie it in front of the diseased gland. If your finger should not be sufficiently long to make the knot, you should then use the *tonsil iron*, an instrument well adapted for the purpose, and would do much better for performing the operation altogether, than either the probe or finger.

If the tumour is not of that form which will admit of a ligature being put on in the way just mentioned, you must then pass the ligature through the centre of the swelling, by means of a needle, and tie it above and below; your ligature, must of necessity, be double. In this way, you will succeed, as effectually as with the other mode, in producing a separation of the enlarged part.

HARE-LIP.

1. Hare-lip is sometimes *single*, that is, the fissure being only on one side; sometimes *double*, a fissure being then on each side; and occasionally attended with a want of the teeth in the upper jaw; also a loss of the velum pendulum palati and uvula.

Sometimes in the double hare-lip, the only thing between the fissures is a small projection of cartilaginous substance, attached to the tip of the nose; the soft palate, in these cases, is generally wanting, and the turbinated bone exposed.

2. In the operation for the removal of hare-lip, the simple principle is union by adhesion or first intention. The nature of the operation must obviously depend upon its being either a single or double hare-lip.

Operation for Single Hare-lip:—Pare off the edge of the divided lip on each side, by means of a small bistoury: in executing this step of the operation, take care that you cut off enough, for immediately at the margin, the parts are callous, and will not readily unite. Having pared off a sufficient quantity of both edges, all that remains is to apply the ligatures, of which two are enough. Introduce one ligature immediately at the edge of the lip, that is, at the lowest part of the divided portions where the red part or line of the lip begins, and the other ligature is to be introduced exactly midway between the first and the extent of the wound towards the nose.

As your object should be to cause the wound to unite as soon as possible, any thing calculated to retard that effect should be studiously avoided; and, as wax is known to have a tendency to induce suppuration and ulceration, it should not be rubbed over the ligatures. Again, the ligatures should not be too delicate, that is not too thin, if they are, the lip might be cut through by them.

3. Having gone through the operation for single hare-lip, we will next speak of the operation for the double hare-lip, and afterwards allude to other circumstances connected with them.

Operation for Double Hare-lip:—It has been recommended to cut away that portion of skin which exists between the two fissures. That, however, is not the best plan; indeed, it is a very bad one. Always allow that portion of skin to remain, you will find it a great support, and of considerable utility in rendering the operation perfect. Therefore you are to pare the edges of this portion of skin in the same manner as you were directed in the first operation. But you must not, when a hare-lip is double, operate at both sides on the same day. You must let one side get well, and then you may operate on the other.

4. When the operation for hare-lip has been performed, and the edges of the lip have been brought together, your best plan is to let the blood remain over the wound; let it clot there, and not sponge it off.

This will be the best bond of union, and the adhesions which take place under this, seldom give way. Poultices must never be used.

5. In performing these operations, there will sometimes be considerable bleeding from the superior labial artery.

There will not be any necessity for applying a distinct ligature to the vessel, because you can easily tie the ligature at the angles of the lip, in such a manner as shall compress the artery and stop the bleeding. A separate ligature would be highly improper.

6. As regards the time of removing the ligatures, you must be governed by the state in which you find the parts.

On the fourth day after the operation, the middle ligature may be removed, and on the fifth or sixth, the other. If adhesion has not taken place, you must not take away the ligatures on the fourth or fifth day, but you should wait a short time longer.

7. With respect to the age at which you should operate, I would advise you never to do so on very young infants, but defer it until the completion of dentition.

Children when so very young, are not competent to undergo operations, and you ought not to perform them for hare-lip, unless the children have reached the age of *two years*. After that period they possess some degree of strength, and are much less disposed to irritation and convulsions.

CANCER LABII.

1. Cancer of the lip is of a true scirrhous nature, even at the beginning; it is hard, has a bleeding surface, everted edges; and, as it proceeds in its destructive course, communicates disease to the glands; there is

likewise felt in it, at particular periods, the most dreadful pain. It chiefly affects the under-lip.

The disease generally arises from the use of a pipe:—The adhesive nature of the clay of which the pipe is made, causes it to adhere to the lip: at length the cuticle becomes torn off, and the continued irritation frets the sore into a true cancerous disease.

2. An operation for the complete removal of the disease, is the patient's only real hope of succour. Oxyde of arsenic has been employed; but it very soon produces a rapid disease of the glands, therefore ought to be abandoned.

In removing this disease with the knife, you should make an opening in the lip, similar to what has been advised in single hare-lip; that is, it should be a triangular portion of the lip, including the disease, entirely cut out; the integuments can be easily approximated, and kept in their proper situations by as many ligatures as the size of the wound shall seem to require; generally speaking, two will be found quite sufficient. The hemorrhage from the inferior labial artery may be stopped in the same manner as was recommended in the hare-lip operation.

TIC DOULOUREUX.

1. This is a most dreadfully painful affection of the nerves of the face, but of what nature it is difficult to say.

The nerves in this disease are not in an inflamed state, most certainly, for under the most horrid suffering they are found of a natural colour: they are not increased, but, on the contrary, are found to be rather diminished. Again, I think the disease to be one of diminished action rather than of increased; and it has been found that stimulating, exciting medicines, are more beneficial than those of an opposite character.

2. *Treatment:*—The principal relief has hitherto been derived from operations, and these operations have consisted in dividing some of the nerves of the face.

The division of the diseased branch will at least generally succeed in keeping off the pain for the space of three or four months; about which time it appears that the nerve re-unites, or that its branches anastomose with each other.

3. As operations will afford even a temporary relief, you may probably be called upon to do them; I shall therefore point out the different steps of dividing the sub-orbitar, supra-orbitar, and sub-mental nerves.

Sub-orbitar Nerve:—If it should be deemed requisite to divide the sub-orbitar nerve, it should be done a quarter of an inch below the orbit: the nerve passes out through the foramen, half an inch below, so that you are to divide it midway between the foramen and the edge of the orbit; if you divide it lower than this, you will leave some branches which will still continue the disease. The proper mode to be adopted for dividing it, is to introduce a sharp pointed bistoury at the distance from the orbit already stated, and carrying the point of the instrument close upon the bone, you hook up the nerve on its edge, then press upon the skin over the edge with your finger, and at the same time withdraw the knife through the opening by which it entered; in this way, as you take out the knife, the nerve will be divided. You should ask the patient if he feels a numbness of the upper lip, and if he should not, your operation will be complete.

Supra-orbitar Nerve:—When necessary, the supra-orbitar branch is to be divided in a similar manner, by introducing the knife under the integuments of the superciliary ridge, and cutting through the nerve immediately as it emerges from the supra-orbitar foramen, by carrying the point of the knife from the nose outwards.

Sub-mental Nerve:—When the sub-mental nerve requires division, you need not make any incision through the integuments, but may perform the operation by placing the knife within the mouth, and directing its point downwards to the mental foramen, where the nerve passes out, and, by gliding the knife along the bone at that part, the nerve is sure to be divided. In performing this operation, you may direct your knife by the bicuspidati teeth, the anterior maxillary foramen being just below them.

4. The best medical treatment you can adopt for cases of tic-douloureux, is the administration of carbonate of iron; but it, of course, cannot cure, if the disease is otherwise than functional.

POISONS.

1. Poisons are those substances, which, in small quantities, produce deleterious effects on the human body.

2. Poisons are derived from five sources: viz. those from the animal and vegetable kingdoms; the mineral and

Mr Skey of Bartholomews Hospital gives the following recipe as a cure for cases of Tic Doloureux and acute Neuralgia –

℞ Aconitinae gr. v. Cerat Cetacei ʒvj M –
to be applied over the track of the painful nerve and rubbed with the finger for half a minute or longer. The applications to be made once or twice a day according to the degree of pain. Med Gaz. Nov 5th 1836 ..

It is confidently asserted in the Geelong Advertiser that Permanganate of Potash with was the application of the remedy for the bite of Centipedes & other venomous Animals, has been attended in South Australia with invariable success —

chemical; and another furnished by man himself, called morbid poisons.

3. There is a material difference in the action of poisons: some affect the vascular system, others the nervous; while many poisons, both the nervous and vascular systems at the same time.

In looking at poisons from many animals, for example, we find the first action in the arterial system, while the influence of others evidently begins in the nerves. The poisons communicated by the viper and rattle-snake attack the arterial system first; that from the bite of a rabid animal, influences the nervous system first; but ultimately, in these cases both become affected. Vegetable poisons act solely on the nerves.

4. Poisons diminish in effect by repetition; so that some, as opium, may be given until they lose their influence.

Vegetable poisons produce effects in proportion to the quantity taken, whereas, with morbid poisons, the quantity makes no difference in its particular specific action; but this is regulated by the peculiar condition of the patient.

ANIMAL POISONS.

5. Under the head of animal poisons we shall have to speak of hydrophobia, the bite of vipers, and the sting of the wasp and hornet.

6. *Hydrophobia:*—This disease is the result of poison from rabid animals; and is so different in its character, so opposed to those arising from any of the other poisons, so marked in its nature, so horrid in its effects, that, upon seeing it, you could not hesitate to form a correct opinion as to the nature of the malady.

The first symptom a person experiences who has been bitten by a rabid animal, is pain in the injured part; and this is usually felt from the third to the fifth week. The next symptom is a sense of chilliness, succeeded by rigors and heat; then a difficulty of swallowing is felt, not of liquids in particular, but of any substance;—this arises from the constriction of the muscles of the pharynx; and so violent are the spasms of the throat, that upon offering the patient any thing to swallow, you would think they would directly occasion suffocation; he will desist from the attempt, and tell you he will try by and by; upon again applying the cup to his lips, he will be seized with the most horrid shuddering, turn away to avoid the sight of what he was about to take, and sit down in a state of exhaustion.

7. In hydrophobia there is evidently a great excitement of the nervous system, and it is quite erroneous to suppose that all the symptoms of the disease are produced by inflammation.

On the dissection of those who have died of hydrophobia, there has been found inflammation of the internal surface of the pharynx; the mucous and muscular coats of the stomach similarly inflamed, and the muscular fibres of the latter, in a state of violent contraction:—the contents of the stomach not digested.

8. Although the appearance after death, confirm the previous existence of inflammation, yet they are not sufficient to account for the symptoms, and the cause certainly resides in the nervous system.

He who supposes that the disease depends upon inflammation, and treats it by bleeding, does not entertain correct views of the complaint; he is quite mistaken in its character.

9. *Treatment of Hydrophobia*:—The best mode that can be adopted is, immediately after the part has been bitten, to cut it out; you should first ascertain at what depth the teeth have entered, by means of a probe, and then take care to excise a sufficient quantity, and allow no part of the injured integument, cellular membrane, or muscle, to remain.

If persons should foolishly object to having the poisoned part cut away, I advise you in such cases to let sink into the wound, a small piece of the potassa fusa; this will readily dissolve, and, becoming liquid, its cauterizing influence will be communicated to each part of the wound, and thus destroy the influence of the poison.

10. As for medical remedies, when the symptoms of hydrophobia have once appeared, I am not acquainted with any. The only course I think calculated to do good, is that which has lately been adopted in France, viz. the injection of warm water into the veins.

To make the employment of the remedy safe, and to prevent

pressure of the brain, the same quantity of blood as the water to be injected, should be previously abstracted. I may here remark, however, that the blood should not be taken away before the injection of the water, but may be let to flow from one vein while the water is thrown in at another, and this probably would be the better plan.

11. *Bite of the Viper:*—This not unfrequently proves destructive to life; it has both a nervous and arterial influence.

In these cases, I should advise you to cut out the part that has been bitten, and apply a ligature above the wound, if the situation will admit of it, with a view of preventing absorption.

12. *Sting of the Wasp and Hornet:*—The sting of the wasp and hornet gives rise, in many cases, to very great pain and severe inflammation.

The best application to mitigate the effects, is composed of one drachm of opium, rubbed down in an ounce of oil; put some of this on lint, and lay it over the wound, occasionally changing it; at the same time you should keep the bowels open by aperients.

VEGETABLE POISONS.

13. All vegetable poisons act on the nervous system, and do not destroy life by producing violent inflammation. They gradually affect the system shortly after their introduction.

You should make up your mind never to give an opinion as to the death of an individual being produced by a vegetable poison, unless you find that a vegetable poison is in the stomach, or some other strong proof be given that it was administered. No appearances after death ought to induce you to take an oath that an individual has perished by a vegetable poison.

14. The vegetable poisons to which we shall allude, are, hemlock, tobacco, and opium.

15. *Hemlock:*—The common effects which hemlock produces are, giddiness, vomiting, and very severe pain in the head.

These symptoms are to be counteracted by evacuating the stomach by a scruple of sulphate of zinc, dissolved in an ounce of water; or by some other powerful emetic; and having reduced the cerebral excitement, by bleeding and purging, administer freely vinegar and water, or any other acidulous liquid. *Ed.*

16. *Tobacco:*—This is a highly poisonous substance, though it is rarely given in such quantities as to prove destructive to existence.

Tobacco, either applied externally, or taken into the stomach, is a violent poison, producing severe nausea, vomiting, headache, and other sensations of inebriety; sudden sinking of the strength, cold sweats, convulsions and death. To counteract these effects, (if immediately after the cause,) evacuate the stomach by two or three grains of tartarized antimony, and assist its operation by irritating the fauces; but should some time have elapsed, give castor oil and purgatives, and immediately afterwards, lemon juice and acidulous drinks; if, however, the sedative effects be already produced, nothing can be done until the habit be roused by brandy, camphor, and cordials. *Ed.*

17. *Opium:*—Opium, administered in considerable quantities, destroys life, by producing apoplectic symptoms.

When opium is taken in considerable doses for a length of time, the result is, that it renders the complexion of the person extremely sallow; it produces obstinate costiveness, and indeed, arrests all the secretions. It also very much diminishes the virile power, and the disposition to sexual intercourse. The nervous system is materially excited by opium.

18. Opium applied externally will produce poisonous effects; not so soon, however, as when it is administered internally, but with equal certainty.

If you apply opium over an extensive surface of a sore, it will produce obstinate costiveness, a violent pain in the head, a furred brown tongue, and a high degree of fever; you must, therefore, be careful in your application of this remedy.

19. With respect to the treatment to be adopted in these cases, active emetics should be immediately administered; or, if you have not any at hand, you must endeavour to excite as much irritation as possible in the throat, with a view of producing vomiting. Where emetics cannot be swallowed, the *stomach-pump* is a most serviceable instrument.

The stomach pump not only enables you to remove the poison from

the stomach, but also to throw in water in considerable quantities, and to introduce stimulating remedies after the opium is removed, for the purpose of restoring the functions of the nervous system.

MINERAL POISONS.

20. Mineral poisons destroy, some by arterial, and some by nervous influence; but those which are most commonly taken, are arsenic, muriate of barytes, and oxy-muriate of mercury, and each of these produce inflammation.

21. *Arsenic:*—Arsenic is a violent poison, very commonly taken for the purpose of committing suicide.

Very soon after arsenic is swallowed, the *most excruciating pain* is felt in the stomach; there is excessive vomiting, violent spasmodic contractions of the muscles of the abdomen, twitchings and convulsive motions of the hands.

22. A person who has taken a sufficient quantity of arsenic to destroy life, dies about nine hours after having taken it.

During that time he suffers the most excruciating agony, until within two hours of his death, when his pain is somewhat mitigated; he is then convulsed, his body is perfectly pallid, and covered with a cold perspiration, and his fæces pass off involuntarily.

On examination after death, you will find a large quantity of mucus secreted in the stomach, a part of the arsenic supported in the mucus, partial inflammation, and gangrenous spots in the internal part of the stomach. Having found these appearances, and carefully washed out the stomach, you send the contents to some experienced person to analyze.

23. In treating cases of poison by arsenic, the stomach should be evacuated by administering large draughts of tepid mucilaginous fluids, or sugar and water, lime-water, or chalk and water. *Ed.*

Afterwards counteract the inflammatory symptoms, by bleeding freely, both generally and locally, by tepid baths, emollient enemas, and narcotics. If the immediate fatal symptoms are averted, let the patient, for a long time, live on farinaceous food, milk, and demulcents. *Ed.*

24. Arsenic applied externally, produces very similar effects as when taken into the stomach.

25. *Oxy-muriate of Mercury:*—This poison is often used for the purpose of destroying life; it produces vomiting and purging, great depression of strength, coldness of the extremities, and death frequently ensues in the course of a few hours.

The best treatment you can adopt in these cases, is to mix a quantity of soap with warm water, and making it in as thick a lather as you can, give it in large quantities to the patient. The alkali of the soap immediately decomposes the oxymurlate of mercury, while the greasy matter sheaths the stomach, and checks the further influence of any portion of the substance which might remain. Diluents should he given to a very considerable extent as well as the alkali. The stomach pump may also be very advantageously employed, using soap aud water for injecting into the stomach, instead of plain water.

MORBID POISONS.

26. The action of morbid or specific poisons are various, some acting on the arteries, some on the nerves, and others commencing in one particular part, and ultimately affecting the whole system.

The morbid poison which you, as general practitioners, are called upon to consider, are those of typhus, scarlatina, measles, small-pox, cow-pox, venereal disease, &c.; but of these we shall only enter on the virus of venereal intercourse.

27. Whether morbid poisons be taken from the living or the dead, their influence appears to be the same.

VENEREAL DISEASES.

1. There are two distinct poisons communicated by venereal intercourse; one, the poison of gonorrhœa; the other, the poison of syphilis.

There is no comparison as to the difficulty of getting rid of syphilis

and gonorrhœa: the former is very easily cured; but gonorrhœa is a disease which very often baffles the longest experience, and the greatest professional skill.

GONORRHŒA.

2. If gonorrhœal matter falls on a mucous membrane, there will be a discharge of infectious matter, capable of re-producing the same disease.

Although the appearance of gonorrhœal matter is purulent, it has not really the character of common pus. If you examine the discharge by the aid of a magnifying power, you will find that, though there may be globules of pus, the greater part of the discharge is mucus.

3. When gonorrhœal matter is applied to the urethra, the characteristic symptoms generally arise in three or four days after its application.

The patient first experiences a sense of titillation in the urethra, as if a drop of urine were contained in it. This directs his attention to the part, and he finds that the lips of the urethra are red, and that there is a slight mucous discharge. Afterwards the urethra begins to be affected with considerable heat, and pain is experienced in voiding the urine, which state is called ardor urinæ. The pain increases till it becomes, in many cases, excessively severe; there is an appearance of threads mixed with the urine, which arises from the adhesive inflammation in the lacunæ of the urethra. The next effect is a considerable diminution in the stream of urine, the swollen state of the urethra contracting the size of the canal. (The urine is often discharged in two, three, or more streams, in consequence of the contracted and irregular state of the urethra.) At first the discharge from the urethra is mucous, but after a little time it assumes a purulent appearance. The matter becomes yellow, and, if the inflammation is very considerable, green; and it is often intermixed with blood, so as to give it a sanious appearance.

4. The usual limit of the appearance of gonorrhœa, after connexion, is from four to seven days; it is seldom under four, and very rarely exceeds seven, days.

I have known it, however, occur within twenty-four hours after connexion; and sometimes a fortnight, or a longer time, will elapse before it appears.

5. The time that gonorrhœal matter will continue to

discharge, is quite indefinite. It is said that gonorrhœa will wear itself out; but it is an assertion which is not to be relied upon, for it sometimes continues for so long a time, that even where medicines have been employed, it remains an opprobrium to our art.

In no case, ought you to rely on the efforts of nature for its cure; for, in general, you may very much expedite it by adopting a judicious method of treatment.

6. Besides the symptoms already enumerated as the external effects on the urethra, gonorrhœa takes also an internal course.

It does not confine itself to the beginning of the urethra, but extends along the course of that canal, and often produces an erysipelatous inflammation of the glands and frænum, occasioning effusion into the prepuce and phymosis. The absorbent vessels on the dorsum penis often become enlarged and hard, and produce little abscesses, which go on to suppuration.

7. The glands of the groin are generally sympathetically affected, and, in a first gonorrhœa, seldom fail to become enlarged and painful. They very rarely go on to the formation of matter, if proper attention is paid on the part of the surgeon.

Where the glands of the groin are affected by gonorrhœal matter, several are attacked at the same time; whereas, in the absorption of the poison of syphilis, a single gland only is enlarged on each side.

8. The other circumstances to be considered, with regard to the internal course of gonorrhœa, are, inflammation, stricture, chordee, abscesses in the lacunæ, &c. Of these we shall hereafter treat.

Inflammation, although commencing at the lips of the urethra, very often extends along the course of that canal, so that there will be effusion further than the original seat of the inflammation.

Irritation and inflammation also takes place in the corpora spongiosa, producing that painful state of the parts, termed *chordee*, in which the penis feels as if it were bound down, so as to prevent a complete extension. The penis is sometimes curved, and sometimes turned considerably to one side.

Another effect, is an inflammatory state of the muscles of the perinæum, accompanied with great irritation, and violent spasmodic contractions.

9. Whenever an old man gets a gonorrhœa, it is gene-

rally accompanied with an enlarged state of the prostrate gland; the bladder becomes affected in consequence of gonorrhœal inflammation; it becomes highly irritable, and the patient experiences a constant inclination to make water.

From what we have surmised in regard to the symptoms and results of gonorrhœa, you can very well convince yourselves that it produces various effects, not only in its external, but in its internal course.

10. *Cause:*—The cause of gonorrhœa is undoubtedly inflammation of the lacunæ of the urethra, and particularly of the lacuna magna, from the previous application of gonorrhœal matter to the lips of the urethra.

The inflammation is of the erysipelatous kind, but there is no appearance of ulceration. If ulcerations were produced, the membrane of the urethra would soon give way. It merely gives rise to a specific secretion from the mouths of the vessels. Ulceration does occasionally take place in the lacunæ, but not in the urethra itself.

11. The discharge of gonorrhœa is not unfrequently entirely suspended by constitutional causes, but the symptoms will return as soon as the constitutional irritation ceases.

A man shall have an abundant discharge from the urethra, considerable pain, and even chordee; and, if he should get a fever, the discharge disappears, the pain ceases, and he will be entirely free from all symptoms of the disease for a period of from seventeen to twenty days; as soon, however, as he begins to recover from his fever, the discharge of matter will be resumed, the pain and chordee will return, and a long time may elapse before the disease will be removed.

12. *Treatment:*—You will generally find the cure of gonorrhœa difficult in proportion as the constitution of the patient is disposed to strumous affections.

If a patient has pimples on his face, enlargement of the glands of the neck, a thin delicate skin and irritable fibre, you may expect to have great difficulty in curing gonorrhœa.

13. The treatment of gonorrhœa is founded on two principles; the disease may be either treated simply, by diminishing inflammation, or it may be treated by producing a change in the action of the part, by which the disease is removed in a short period.

Mercury is wholly unnecessary in any form of this disease, and ought by no means to be used.

14. Your treatment must vary according as the case may be a first clap, or not; for it seldom happens it can be cured by the same means which may be employed in subsequent attacks.

When a patient applies to you for his first clap, there will be generally a great deal of inflammation, and I advise you always to purge actively with the sulphate of magnesia and the infusion of senna. You may afterwards give the submuriate of mercury, with extract of colocynth, but merely as a purge; for if it were to act as a mercurial, I would not give it at all. There is no necessity for giving calomel, unless you wish it to act on the liver, as well as on the intestinal canal. Having purged the patient very freely, you will direct him to take plentifully, diluent drinks.

15. The diluents usually recommended in this disease, are very numerous; but some of them ought not to be used under peculiar circumstances.

Two drachms of the carbonate of potash, or the subcarbonate of soda, should be taken in a quart of some diluting drink, in the course of a day: capillaire or tea, will answer the purpose very well; some advise the gum acacia, but whether it does any good or not, I do not know. I have found the liquor calcis a very excellent diluent in this disease. Soda-water is often useful, but it must be ascertained whether it produces irritability of the bladder; for in some persons, it increases instead of diminishing irritability. If it increases very much the inclination to make water, it should not be persisted in; if it does not produce this effect, it is an excellent diluent.

16. Excess of inflammation in gonorrhœa, will require your attention and alleviation.

The penis should be suffered to hang for a considerable time in warm water, which will relieve the inflammation, and produce nearly all the good effects of a warm bath. When the ardor urinæ, and pain from chordee, is very severe, twenty drops of the liquor potassæ, with from three to five grains of conium, in the camphor mixture, may be given with considerable benefit.

17. The plan of treatment, already stated, is that which you are to pursue for the first week; after which period, your remedies must somewhat differ.

After that time, you may apply lint with the liquor plumbi subacetatis dilutus (white wash,) to the part; and at the end of the tenth day, when the inflammation has in a great degree subsided, you may

give the balsamum copaibæ. An ounce of the balsam may be mixed with an ounce of the mucilage of acacia, and four ounces of the camphor mixture, and a table-spoonful given morning and evening. Having given this mixture for two days, the discharge will be very considerably diminished, and you may then order an injection, and still continue the use of the balsam.

18. Injections ~~out~~ ought not to be used in the first instance, but having waited for ten or twelve days, until the inflammation has in a measure subsided, and the extent of discharge diminished, you may then employ them with benefit and safety.

The best injection you can use, is the liquor plumbi subacetatis dilutus; simply at first, and afterwards united with about six grains of the sulphate of zinc to four of the fluid. [illegible]

If, instead of using an injection at the stated time, you suffer the discharge to run on, week after week, you will be almost sure to lay the foundation of stricture.

19. We have now gone through the different steps of your treatment for a first attack of gonorrhœa; but if a patient applies to you for a second or third clap, you will not proceed in the same way, but give him the balsam of copaiba immediately, which will in general put a speedy stop to the discharge.

The inflammation of a second clap is comparatively slight, so that the treatment which is necessary to subdue inflammatory action in a first clap, is in general unnecessary in subsequent claps. All that is usually required, is to give the balsam of copaiba for a week, and then begin with the injection of the liquor plumbi subacetatis dilutus and the sulphate of zinc.

20. Various injections are employed in the treatment of gonorrhœa: so that if the one you first use does not speedily put a stop to the discharge, it is much better to vary your injection, than to persist in the use of the same, and thereby lay the foundation of stricture.

Half a grain of the sulphate of copper, in an ounce of rose water, is a powerful injection; a solution of one grain of oxymuriate of mercury, in twelve ounces of distilled water, makes a very irritating injection.

The use of irritating injections must necessarily be regulated by circumstances; if they produce much inflammation, you should suspend the use of them; and if, on the other hand, they excite no pain at all, you may gradually increase their strength.

21. If these attempts of cure prove ineffectual, I would recommend you to begin immediately the use of bougies with injections.

The use of bougies will increase the discharge for a time; but, being combined afterwards with the use of an injection of the sulphate of zinc, will generally succeed in effecting a cure.

22. With respect to the number of times the patient should inject, three or four times a day will be quite sufficient.

As to the strength of the injection, it should be increased so as to produce a slight degree of irritation: but it is better to vary the injection, than to increase its strength in any great degree.

23. There are other means of curing gonorrhœa, by producing a change in the action of the urethra, as for instance, by the use of cubebs.

Cubebs appears to produce a specific inflammation of its own, on the urethra, which has the effect of superseding the gonorrhœal inflammation. It is a remedy of a most admirable and useful kind, and may be given with advantage even in the inflammatory stages of gonorrhœa, provided the inflammation does not run excessively high. In the early stages, when the inflammation is just beginning, it often succeeds in removing the disease in a very short space of time. Although cubebs are so serviceable alone, the greatest advantage may be derived from combining its use with that of the balsam of copaiba when the latter is beginning to lose its effect.

24. If strict attention is paid to the rules I have laid down for your treatment of gonorrhœa, I think you will find it the most likely course to contribute to the maintenance of your own professional character, and to the welfare of your patient.

The subsequent surgical subjects which we shall now consider, are the *consequences of gonorrhœa*.

STRICTURES OF THE URETHRA.

1. There are three kinds of stricture of the urethra; the permanent, the spasmodic, and the inflammatory.

2. *Permanent Stricture:*—The permanent stricture is the result of a thickening of the urethra from chronic inflammation.

An individual having permanent stricture, first observes a few drops of water remain after the whole seems to have been discharged, then notices a fine spiral or divided stream, and, lastly, discharges his water by drops only. In this last state, for the purpose of facilitating the escape of the urine and preventing its being retained by the lacunæ of the urethra, he draws out the penis with considerable force.

3. In cases of stricture, you will find in all stages, that the appearances and nature of the urine will be according to the degree of inflammatory excitement.

When the inflammation has extended to the mucous membrane of the bladder, there will be a considerable quantity of mucus with the urine; the urine, when discharged, is as transparent as usual; but when it has cooled, the mucus sinks to the bottom, where it appears ropy, and adheres to the vessel. As the inflammation of the membrane increases, the urine becomes yellow on cooling. When the disease is of a very aggravated nature, the urine will become quite white. If the urine is bloody, it is a proof that the ulcerative process has commenced, and if not bloody, on the contrary.

4. In that state of stricture when the urine is loaded with pus, the patient has frequent and severe rigors, or, even below that state of inflammation.

The person will have frequent shivering fits, so that you would suppose he had an intermittent fever, and would probably order him bark. In these cases, however, this medicine has no effect, and you will find opium the remedy.

5. Persons labouring under stricture, are sometimes severely afflicted with piles, and not unfrequently, direct inguinal hernia.

The last complaint is in consequence of the extreme force that is employed to evacuate the urine.

6. *Seat of Stricture:*—There is no part of the urethra which is not liable to stricture, but most frequently it is found in three situations: first, just at the beginning of the bulb; second, at the membranous part; and thirdly, in the prostrate gland itself.

7. *Cause of Permanent Stricture:*—The cause of permanent stricture of the urethra, is inflammation of the chronic kind, and in ninety-nine cases out of every hundred, it is the result of neglected gonorrhœa.

Chronic inflammation occasions a greater determination of blood to the part, and produces a deposition of adhesive matter on the outer side of the urethra; the urethra itself becomes thickened, which, together with being pressed upon by the adhesive matter collected in the interstitial spaces surrounding the urethra, produces the stricture in question.

8. *Treatment of Permanent Stricture:*—There are three principal objects to be attended to: the first of which is, to cure the complaint by dilation; the second, by absorption; and the third, to destroy it altogether.

The first is effected by mechanical means; the second, by the influence of medicines; and the third, by burning it away with caustic.

9. The first, or cure by dilation, is accomplished by means of bougies; from the regular use of which, strictures may be readily cured, and the strictured part of the urethra made to regain its natural size.

Bougies are made of either wax, catgut, or silver; and they are usually numbered from 1 to 16, according to their dimension, so that the surgeon may on each occasion know the size he is using, and the size be last used. Catheters are sometimes employed as a substitute for bougies, and answer the purpose tolerably well. Catgut bougies are only employed when the stricture is particularly small.

10. The wax bougie is one in general use: but for a successful employment of this bougie, there are a few necessary points to bear in mind.

Never attempt to pass a bougie in its straight state, for, if you do, it will be obstructed in its passage, whether there be stricture or not; you should invariably give it, before its introduction, the curve of the catheter.

Now, with respect to wax bougies, before introducing them into the urethra, you should always warm them by the fire, for the purpose of rendering them soft; when, if they are introduced into the urethra, and pass through the stricture, you will ascertain the distance at which it is situated from the orifice, and the form and size of the stricture will be modelled on the bougie. On the following day, you again introduce two bougies, that is, if there should be no existing inflammation to prevent it; the first bougie you then use, is to be of

the same size as the one with which you concluded on the previous day; after this has been withdrawn, you again pass another, a size larger; thus using on every occasion two bougies, always beginning with one of the same size as that with which you had concluded on each preceding occasion.

11. Although this is the general practice, I do not altogether so well approve of the wax bougie.

The bougie I use, is made of silver; it is of the form of the catheter, but at the point, and running back for some distance towards the handle, it is conical, and the way I use it is this:—I first pass down, in the manner already described, a wax bougie, for the purpose of ascertaining the size, form, and distance of the stricture. Having obtained a knowledge of these, I then introduce my conical silver bougie, the point of which having entered the stricture, the further it passes, the greater is the dilation produced, in consequence of the form of the instrument.

12. In endeavouring to pass a bougie, it now and then happens that the urethra is torn through; and unless attention is paid to the circumstance, may give rise to a troublesome extravasation of urine.

When you suspect a tear of the urethra, immediately withdraw the instrument, and desire the patient, if possible, to retain his urine, that it may not irritate the wound, and also to prevent its escaping through the opening, and becoming extravasated in the surrounding cellular substance. In this way, you give time for a clot to form over the surface of the wound, a slight degree of inflammation is excited, and it becomes healed by the adhesive process, without any further mischief.

13. With respect to burning away strictures with escharotics, you must be particularly careful to prevent them getting in contact with any other part than where their presence is absolutely necessary.

Let me advise you never to use the caustic alkali as a substitute for lunar caustic; it is much too soluble, and by running over an extended surface, is calculated to produce a great degree of inflammation.

14. *Spasmodic Stricture:*—Arises either from a contraction of the muscles surrounding the urethra, or from the urethra itself.

The spasmodic stricture is usually, I believe, more or less connected with permanent stricture; and I am of opinion that the spasms commonly attack the muscular part of the urethra.

15. Spasmodic stricture may arise from various causes, and attacks individuals of all ages. Common accidents will sometimes give rise to it; even in operation for an aneurism.

The complaint usually comes on of a sudden, is *unattended* with pain, and the first notice that a patient has of it is, that he experiences a difficulty in voiding his urine.

16. *Treatment of Spasmodic Stricture:*—This must consist in the introduction of a bougie, and if necessary, other surgical and medical means.

You should introduce a bougie, letting it steal gently along the urinary passage, and when it arrives at the strictured part, there let it rest for a short time; after this, you should gradually push it forward, using only a very slight force, but continuing that force until you have succeeded in passing the stricture. Let the bougie rest for a minute or two in the strictured part, and then withdraw it; directly that you do so, the person will be enabled freely to pass his urine.

If the attempts of introducing a bougie do not answer, other means must then be resorted to; as calomel and opium; antimony; tobacco enema; warm bath and cold bath.

17. *Inflammatory Stricture:*—This kind of stricture is generally produced by the inflammation of gonorrhœa; but there is another mode by which it is caused, and that is, the introduction of a bougie.

The passing of bougies, although done with care, will sometimes give rise to a violent inflammation of the urethra.

18. *Treatment of Inflammatory Stricture:*—Under this complaint, you must not think of introducing either a bougie or catheter; but by a regular and judicious antiphlogistic treatment, you will be able to afford relief.

When a person comes to you, having retention of urine, with dreadful pain in the urethra, you should immediately take blood from the arm, in such quantities as to produce syncope, administer purgatives, apply leeches to the perinæum, and put the patient in a warm bath; you will also, in this complaint, find antimony and opium in a state of combination, particularly serviceable.

ABSCESSES FROM GONORRHŒAL INFLAMMATION, ETC.

1. *Abscesses in the Lacunæ:*—After the violence of the gonorrhœal inflammation has subsided, you will frequently find a great number of small abscesses along the urethra.

You will frequently feel along the under surface of the urethra, a number of small knotty tumours; these, in the course of a short time, successively discharge themselves into the urethra, and the swellings then subside. Sometimes these swellings break externally to the urethra, thus forming a double swelling.

2. The most frequent situation of abscesses of the urethra, from gonorrhœa, is the lacuna magna opposite to the frænum. They likewise form between the lacunæ and the scrotum.

When you feel an abscess moving about the scrotum, and that abscess occurring after the inflammation attending gonorrhœa, you may be pretty sure that it has been formed in the lacunæ, opposite to the scrotum, and will prove troublesome to the practitioner, and dangerous to the patient; for in this situation, abscess after abscess will frequently form, until the patient sinks under the long continuance of the severity of the complaint.

3. The next situation in which we find abscesses that are produced from the same cause, is in the perinæum, giving rise to swellings there, of considerable magnitude. If the inflammation is not checked in its progress, it will give birth to these abscesses, which, if permitted to remain, will at length break through the integuments, and matter and urine will be discharged through the opening.

The passage leading from the external wound to the internal, is exceedingly tortuous, so that upon introducing a probe, it will not directly enter the urethra; indeed you will find great difficulty in getting it there, from the winding and irregular course of the canal which the matter has formed. The nature of the wound will at once shew you that the urine may easily become extravasated into the cellular membrane of the neighbouring parts. From the pressure which these abscesses make upon the urethra, they very frequently give rise to retention of urine.

4. If the inflammation continues to extend, it will be

the means of producing abscesses in the follicles of the prostrate gland.

These likewise will occasion retention of urine, and, upon introducing a catheter to relieve this, it occasionally occurs that the catheter will enter an abscess, and a considerable quantity of matter will pass through it before any urine makes its escape; at length, after the whole of the matter has been evacuated, the cause of the retention having been removed, the urine can be freely expelled from the bladder.

5. It occasionally occurs that the two last varieties of abscess I have mentioned, by being neglected, have led to the formation of fistula in ano.

The true character of the fistula may be learnt by observing that a few drops of urine will, at different periods, run from it; and this will of course convince you that it is connected with the bladder.

6. *Treatment:*—Abscesses of the lacunæ of the urethra, arising from gonorrhœal inflammation, should be continually poulticed until the matter is discharged.

After you are satisfied that it has once formed, it is not right to let the abscesses break of themselves. When, therefore, the hard knot that you feel in the urethra, becomes converted into a fluctuating tumour, connected with the skin covering it, the sooner you open it the better.

7. When the abscesses are situated in the lacunæ opposite to the scrotum, the treatment must be exceedingly prompt, for if it is not, you will endanger the life of your patient.

Into these abscesses make early and free incisions; let your incisions be of considerable size, and a great deal larger externally than internally; I generally make these incisions in the middle of the septum, at the anterior part of the scrotum.

8. When you are called to cases of abscess in perinæo, it is necessary that you should be particularly decisive in your management of these complaints, for the purpose of guarding against that troublesome and dangerous disease, fistula in perinæo.

If called to a case of abscess in perinæo, the best plan of treatment that you can pursue, is immediately to introduce a catheter, made of *elastic gum*; this will relieve the retention, and obviate much irritation; apply leeches and evaporating lotions to the swelling, and keep the bowels open by cooling laxatives. If these means should not

succeed in dispelling the tumour, the moment that you can distinctly feel fluctuation, you should make such an opening with the lancet, as will allow the matter to escape, to prevent its burrowing under the skin and producing additional mischief; it will save the patient much pain, and will probably lead to the speedy cure of the disease, which might otherwise prove not only protracted, but fatal. Remember you are not only to open the abscess early, but keep introduced in the bladder, an elastic gum catheter.

9. In the treatment of abscesses of the lacunæ of the urethra and perinæum, it is of the utmost importance that you should attend to the state of the patient's general health, for these abscesses often form in broken constitutions, and it is impossible that you cure them while the system is in a depraved and debilitated state.

You should therefore prescribe alterative tonic medicines, nutritive diet, and country air: attention to the state of the constitution will sometimes cure these abscesses, after every local remedy has failed.

10. *Extravasated Urine:*—Extravasation of urine, from bursting of the urethra, can never happen without the grossest neglect on the part of either the surgeon or the patient; unless, indeed, in the cases of unfortunate sailors, who have been so situated that they were incapable of procuring medical advice.

You may see these poor fellows brought into the hospital, in the most horrid condition from rupture of the urethra, and the escape of the urine into the cellular membrane of the surrounding parts; the scrotum is in these cases of a purple cast, and extremely distended; and when the urine is allowed to escape, it will sometimes prove successful; but, at others, the entire scrotum will slough, together with a considerable portion of the surrounding parts, and sometimes lead to the death of the patient.

11. *Treatment:*—This must consist in making an incision for the escape of the urine, and paying attention to the stricture, which is the cause of the accident.

When you see a case of this description, you should immediately make, into the scrotum, an incision at least two inches in length; this incision should be in a direction *upwards* and *backwards* towards the nates.

12. *Irritable Urethra:*—The irritable state of the urethra is attended with inflammation of the chronic kind; and persons suffering under the complaint, have a frequent desire to make water.

The affection may be readily removed by giving, three times a day, an eighth part of a grain of the oxy-muriate of mercury, and a drachm of the nitrous spirit of ether. These should be continued for a little time, and the complaint will disappear.

AFFECTIONS OF THE PROSTRATE GLAND.

1. There are three species of disease, exclusive of the formation of calculi, by which the prostrate gland is affected; viz. acute inflammation, chronic inflammation or enlarged prostrate, and the fungous polypi.

2. *Acute Inflammation of the Prostrate Gland:*—This complaint is not confined, like the chronic enlargement, to late periods of life, but attacks persons of any age, and generally terminates in suppuration.

The most prominent symptom which characterizes this complaint, is violent pain immediately after discharging the urine, and in this respect, the disease resembles stone. As the inflammation advances, an abscess will be produced in the gland, and retention of urine the consequence.

3. Your treatment, in this case, must consist of blood-letting, and administering mild laxatives, together with antimonial medicines. The catheter it is also necessary should be used.

You, therefore, pass a common catheter, and about the fourth day you will perceive that matter escapes through it; so that this, coupled with other circumstances, stamps the nature of the complaint. Rigors do not attend the formation of this matter.

4. *Chronic Inflammation, or Enlargement of the Prostrate Gland:*—This is the consequence of age, and not of disease; and is characterized by a number of symptoms sufficiently particular to distinguish it from stone.

In these cases there is sometimes partial retention of urine; the patient is a long time voiding his urine, which has a particularly powerful smell, arising from its being ammoniated in consequence of its long continuance in the bladder. The next symptoms observable, are pain and numbness in the glans penis; the prepuce not possessing its usual sensibility; there is a sense of weight and uneasiness in the perinæum, relieved by pressure with the finger; pain in the back of one or both thighs, in the loins, and at the origin of the sciatic nerve,

and course of the ureters; and the fæces are flattened from the pressure which is made upon the rectum by the swollen gland. The urine finally acquires a highly offensive ammoniacal smell, and at length becomes white or milky, and when long retained, brown, and even bloody.

5. If the enlargement of the prostrate gland continues to proceed for a length of time, it will, in many cases, occasion a complete retention of urine.

This particular enlargement, may, however, be the effect of retaining more urine in the bladder, and for a longer period, than it ought, or it may be the result of checked perspiration; but in either of these cases, exciting a copious perspiration will often afford relief.

6. The prostrate gland may increase to a most enormous size laterally, without giving rise to retention of urine; but the enlargement which occurs posteriorly in the third lobe, frequently occasions retention, for the enlargement is situated immediately behind the orifice of the urethra, so that the urine collects behind the swelling, presses it upon the mouth of the urethra, and forms a complete barrier to its passage.

From the appearances on dissection after death, as the prostrate enlarges, it is pushed forward: in consequence of which, the urethra becomes curved immediately before the apex of the prostrate; indeed, the coming forward of the prostrate, causes the urethra almost to double upon itself; the curve thus formed, is at the symphysis pubis, and it is in *this* situation that the difficulty of passing the catheter in diseased prostrate is found. Tracing on the course of the urethra, behind the curved part, that canal is seen much enlarged. The next thing we observe is, that the urethra itself is considerably enlarged, that is from an inch and a half to two inches, which increase of length is behind the pubes, and it is owing to this circumstance that you are under the necessity of carrying on the catheter so great a distance after its point has passed the arch of the pubes.

We also find the bladder much enlarged in this disease, as also the ureters and the pelvis of the kidneys.

7. With regard to the cause of retention of urine, in those cases of enlargement of the prostrate gland, where the disease exists in the *third* lobe, it generally arises from the urine having been allowed to remain in the bladder for too long a period; this collecting in so large a quantity that the swollen lobe is pressed forward against the mouth of the urethra, and thus closes the entrance to that canal.

The enlargement of the prostrate laterally, may be readily ascertained by introducing the finger into the rectum; but the enlargement of the middle lobe cannot be so learnt. In what way then? Why, by the introduction of a catheter or bougie (and the latter is the best); it will be found to stop suddenly; you are then to introduce a catheter, for the purpose of drawing off the water; the instrument will be resisted in its common course, and you must *depress* the handle a good deal, with a view of tilting its point over the enlarged gland; thus the end of the instrument will be rising perpendicularly, as it were, behind the pubes.

8. *Treatment of Enlarged Prostrate:*—Your object of treatment may be to endeavour to act upon the gland, by means of small doses of the oxy-muriate of mercury, when the enlargement is the only complaint; but if there is retention, you must relieve this symptom, and afterwards guard against its return.

When no urine passes whatever, and when there is great pain at the neck of the bladder, you should take away blood from the arm, apply leeches to the perinæum, administer purgatives, and put the patient into a warm bath. If these means should succeed in procuring relief, the best medicine that can afterwards be given for the purpose of preventing a return of the retention, and at the same time, of lessening the inconvenience which sometimes attends the complaint, is composed of fifteen drops of the liquor potassæ, five drops of the balsamum copaibæ, and an ounce and a half of the mistura camphoræ. This is the best medicine you can use; it will afford considerable relief, which is all that you can expect, for you must not dream of making a cure.

9. When you are called upon to relieve retention of urine, from enlarged prostrate, by the introduction of a catheter, the instrument should be fourteen inches in length, and a quarter of an inch in diameter. In consequence of the pressure within, a broad instrument will answer better than a narrow one, for being bulbous at the end, it will readily ride over the enlargement.

When introducing the catheter, you will meet with no difficulty until you reach the curve, which the enlargement of the gland has produced in the urethra; the handle of the instrument is to be here slightly raised, for the purpose of insinuating the point through the curved part. Having passed this, you are then to depress the handle completely between the thighs, so as to occasion the point of the instrument immediately to rise perpendicularly above the pubes, in which way, it will readily enter the bladder.

10. In the treatment of enlarged prostrate, an elastic

gum catheter is sometimes introduced into the bladder, and kept there for a continued relief to the patient. In passing an elastic gum catheter, the removal of the stilette will sometimes cause it to enter with ease, when it would not previously pass at all.

If it be deemed requisite to leave the catheter in the bladder, I should prefer one of pewter, for it can be curved down before the scrotum, and, by plugging up the end, the patient may move about as he likes, and, at any time he wishes, can expel his urine.

If a pewter catheter is used, it should be quite new, and ought not to be worn for a longer period than a fortnight, for the urine acts upon the metal, renders it brittle, and may probably cause the instrument to snap.

11. *Fungous Polypi of the Prostrate Gland:*—The last circumstance connected with the prostrate is fungous polypi growing from its base.

I am not aware of any treatment that is likely to be successful for the removal of this disease; it appears to be entirely out of our reach.

IRRITABLE BLADDER.

1. During the latter stages of gonorrhœa, it often happens that the patient is annoyed by a frequent desire of voiding his urine, arising from an irritable state of the bladder; this symptom at length becomes so urgent, that the inclination occurs so often as every ten minutes or quarter of an hour. The complaint will also proceed from retaining the urine too long.

The pain that the patient feels, is in exact proportion to the quantity of urine contained in the bladder; the greater the quantity, the more severe will be the pain.

Sometimes in this complaint, the urine will be mixed with blood; this appearance is calculated to deceive you, and excite a suspicion of the existence of stone, and induce you to pass a sound, for the purpose of satisfying your doubts: now in this disease, the introduction of an instrument into the bladder is highly improper, as it would produce additional irritation.

2. You may readily distinguish this complaint from stone; for in irritable bladder, the pain is felt when the

bladder is full; but in case of calculus, the pain tortures when nothing but the stone remains. It is a very painful complaint.

Irritable bladder of itself is a dreadful disorder, the patient's life is a burthen to him, he is obliged to keep from society, and linger away his tedious hours in solitude.

3. *Treatment:*—Your treatment must be both medical and surgical, for unless they are combined, you will not avail much; but your first object should be to keep the bladder in a state of rest, nothing can be done without it.

To keep the bladder in a state of rest, a short catheter should be kept introduced. A flexible catheter is the one that you are to employ; it should only just enter the bladder, and when sufficient has been introduced, the remainder may be cut off; it should be tied to a bandage carried between the thighs and round the loins. The instrument thus used will afford great ease, and keep the bladder at rest by allowing the urine to escape as fast as it streams from the ureters; thus keeping the bladder continually empty.

In your medical treatment, opium should be given in doses of from one to two grains, with a view of allaying the pain and irritation, and with the same object, five or six grains should be introduced into the rectum in the form of suppositories. The liquor potassæ with opium or some bitter tincture is also recommended; castor oil as a purgative; and after shaving off the hair, a blister should be applied over the region of the pubes: the counter irritation thus produced, will prove of infinite service.

4. Sometimes irritable bladder goes on to ulceration; the urine will then be mixed with blood, there will likewise be a discharge of bloody mucus, and the inclination to void the urine will be more frequent, and exceedingly urgent.

If the bladder should be ulcerative, you must pursue *exactly* the same plan of treatment, it is the best that can be adopted; for, by keeping the bladder at rest, you afford the sores an opportunity of healing.

MUCOUS DISEASE OF THE BLADDER.

5. This disease is known by the discharge from the urethra, of an enormous quantity of ropy yellow mucus; so thick that it hangs to the sides of the vessel.

This mucus is produced from the internal surface of the kidneys, ureters, and bladder.

6. *Treatment :*—The treatment of this disease, like that for irritable bladder, must also be medical as well as surgical.

Introduce a short catheter, as in the last case, and give your patient one eighth of a grain of the oxymuriate of mercury, three times a day, and likewise three times a day you should give one drachm of the nitrous spirit of æther, with an ounce and a half of the camphor mixture; soda water should also be plentifully drunk. But the best remedy that can be given is the balsam of copaiba; no medicine so completely robs the urine of mucus as this. Eight or ten drops three times a day, will be found quite sufficient: it may be given in conjunction with the medicines before mentioned, or in mucilage and water.

PARALYSIS OF THE BLADDER.

7. Now and then a paralytic state of the bladder takes place. In these cases, the urine will not pass when you introduce a catheter, if the patient is in a recumbent posture ; but if he stands upright, the pressure of the super-incumbent viscera on the bladder, will occasion it to flow in a full stream.

The treatment which I have adopted in paralysis of the bladder, has been, blisters to the loins, and the exhibition of a pill twice a day, composed of five grains of the chio turpentine, and a quarter of a grain of powdered cantharides.

HEMORRHAGE FROM THE KIDNEYS.

1. It occasionally happens that persons will be troubled by frequent bleedings from the kidneys.

In these cases, you must order the recumbent posture to be rigidly adhered to, in order to give the vessels an opportunity of closing, and continued for some time after this has taken place. The balsamum copaibæ should also be prescribed in small doses. The diet low.

CHORDEE.

1. A chordee is a painful erection of the penis, during which, it is drawn violently back or to one side. It arises from an inflammatory condition of the corpus spongiosum, and the pain is produced by the dilatation of the vessels, from the influx of blood, to cause an erection. It is most troublesome when the patient is warm in bed.

Your treatment must consist in the application of poultices, fomentations, and leeches. During the night, the penis may be enveloped with linen, wetted with the white wash; evaporating lotions may also be employed. The best medicine you can give is twenty drops of the liquor potassæ, three grains of the extractum conii, and ten drachms of the mistura camphoræ, three times a day. You may also give a pill every night, composed of a grain of calomel, a grain of opium, and two grains of camphor; this will be found materially to abate the pain, and will be productive of much comfort.

2. Very frequently after the painful erections have disappeared, there will be a considerable degree of hardness left, but easy of removal.

For this purpose you should rub the part with camphorated mercurial ointment, and apply some of the same ointment on silk.

3. Sometimes after a person has had gonorrhœa very severely, the dorsum of the penis will become extremely hard, as, upon examination, to feel ossified. This is called *chronic chordee.*

To remove this complaint, you should direct the linimentum hydrargyri to be rubbed on the part night and morning; or you may order it to be kept covered by a plaster of the ceratum saponis: this acts like a poultice, and, when the complaint is recent, will answer the purpose very well; but when of long standing, you must have recourse to the mercurial liniment, and even this will often fail, owing to the extremely thickened state of the tendinous sheath of the dorsum.

HEMORRHAGE FROM THE URETHRA.

1. This sometimes occurs from the rupture of a vessel during inflammation; at other times, and more frequently so, it is caused by the introduction of a catheter or bougie.

Your treatment for these cases is very simple, a compress must be used on the bleeding part; you may give to the patient some aperient medicine, and, to lessen the disposition to bleeding, you may take blood from the arm.

INFLAMMATION OF THE TESTICLE.

1. Inflammation of the testicle and epididymis is a frequent result of the introduction of a bougie.

This complaint, from an error of pathology, used to be called *hernia humoralis*, in consequence of a belief that it arose from a fluxion of humours to the testicle.

2. The inflammation of the testicle generally shows itself from within ten to fourteen days after the gonorrhœal discharge. The first symptom, is a sensation of a drop of urine in the perinæum; at this time, the inflammation is proceeding down the urethra, and before it reaches the testicle, affects the prostrate, veru montanum, vasa deferentia, proceeds up the cord to the abdominal ring, then attacks the epididymis, and finally the testicle itself.

While the inflammation is confined to the epididymis, the patient feels little or no pain; but when it has passed to the body of the testicle, then there will be felt excessive pain in consequence of the unyielding nature of the tunica albuginea. The scrotum is sometimes reddened, arising from the degree of violence which characterizes the inflammation. The pain does not, generally speaking, correspond to the course of the inflammation just now described.

3. *Treatment:*—This must depend entirely on the violence of the complaint, and whether it will yield to simple remedies, or go on to suppuration.

First order a suspensory bandage; give the patient two or three calomel and colocynth pills: and in the morning, a dose of infusion of senna with sulphate of magnesia. Apply to the testes, a lotion composed of an ounce of spirits of wine and five ounces of water; or, muriate of ammonia and water, and a small quantity of the spirit. These means usually succeed in overcoming the disease; if they should not, you must take blood from the scrotum, but not by the application of leeches, at least not in private practice, as the mess they make, will probably lead to an exposure of your patient's malady; therefore, what I do is this,—I direct the patient to stand before me, and, making the skin of the scrotum tense, I open three or four of the veins with the point of the lancet, then by fomenting the scrotum with a little warm water, or directing the patient to stand before a fire, in five or ten minutes you obtain as much blood as is requisite; and, by then making the patient lie down, the bleeding will immediately cease. The weight of poultices is an objection to their employment; but fomentations may be prescribed with advantage, as they unload the vessels, and act beneficially in the same manner as leeches. At the same time, purgative medicines should be freely given.

4. In some irritable constitutions, even all the remedies which I have named, will not be successful; the pain and inflammation still continuing, you are under the necessity of employing anodynes; and it sometimes happens that, notwithstanding all we can do, abscesses in the testicle will form.

The best form of anodyne is ten grains of the compound powder of ipecacuanha with two grains of calomel, every night, and sometimes night and morning. If the inflammation goes on to the formation of abscesses, we must then apply poultices and fomentations, for the purpose of bringing them to a speedy issue. After the discharge of matter, should any sinuses remain, you must inject with a solution of sulphate of copper, in the proportion of two grains to an ounce of water; diluted sulphuric acid is occasionally used, but I give the preference to the former. The reason that there is so much difficulty in getting these sinuses to heal, is that the semen is a fluid which is constantly secreting day and night, consequently the adhesive inflammation is interrupted in its progress.

5. There very frequently sprouts out from the sinuses just alluded to, a fungus, though not of a malignant character; but resembling those shooting from the brain.

The treatment consists in paring them off at their roots, and then bringing the edges of the external wound in contact.

WASTING OF THE TESTES.

1. This sometimes takes place, and is produced by two causes, absorption and ulceration, and it generally occurs in early age.

It is a curious circumstance, that if a boy of fifteen or sixteen gets a gonorrhœa, that it is often succeeded by a wasting of one or both testicles. This effect is not the result of gonorrhœa only; but any cause producing inflammation of the testicle, in very young persons, will now and then lead to a similar misfortune.

2. *Treatment:*—The only course likely to prevent their entire decay, is probably to employ them, to render them active, before the whole of the glandular structure has become absorbed.

If, however, the inflammation of the testicle has been very severe, that alone is sufficient to derange the glandular structure in very young persons. I have known both the testicles to waste from the formation of scrofulous abscesses.

SYMPATHETIC BUBO.

1. This is usually the result of inflammation of the glands of the penis. The inflammation extends on the outward surface of the glands, the absorbents of the dorsum of the penis become enlarged, and, if you rub your finger along the dorsum, you feel them hardened like a knot or cord, and frequently connected with the glands near the pubes.

A bubo of this kind rarely suppurates: now and then you will meet with one that suppurates, but only in very irritable constitutions. When the inflammation extends from the penis to the glands of the groin, these become inflamed also, and enlarged; and it is not at all surprising for a swelling, after a gonorrhœa, to come on in the groin; a patient under such circumstances is afraid of bubo, and alarm is excited in his mind of its being syphilitic; you may, however, calm his fears, and tell him that it is a common concomitant of gonorrhœa, and that he need not be uneasy.

2. The distinction between a sympathetic bubo, and one from syphilis, consists in this circumstance:—in general, one gland only is enlarged in syphilis; but in a sympathetic bubo, you most frequently find a chain of glands affected.

In the groin, there are two sets of glands, one just above Poupart's ligament, and the other two inches or an inch and a half below it; the lower is seldom enlarged from sympathy, the upper frequently.

3. *Treatment:*—The plan of treatment in sympathetic bubo, is the same as that for inflammation in any other part of the body; you purge the patient, apply leeches and an evaporating lotion, and advise him to diminish his quantity of exercise.

Whether the glands will suppurate or not, depends greatly on the mode of treatment; if mercury be given, it will be hurried into a suppurative process; therefore it should not be used so as to produce a mercurial action in the system, but connected with aperients it is proper.

GLEET.

1. Gleet is a disease very difficult of cure. It is said to be that stage of gonorrhœa when the discharge ceases to be infectious; but for my own part, I doubt whether the gonorrhœal discharge ever ceases to be infectious; consequently, I consider you ought to pronounce that the discharge from gonorrhœa which terminates in gleet, never loses its power of producing infection.

The discharge of gleet is generally transparent at first, afterwards yellow, and if there is much excitement, green. If the excitement is very considerable, the discharge will be tinged with blood. It is rendered purulent and bloody from excesses of different kinds.

2. The discharge of gleet does not proceed from the vesiculæ seminales, or Cowper's glands, or the prostrate, but from the lacunæ of the urethra; and what you hear about seminal weakness, is nothing but folly and absurdity; there is no truth at all in it.

A discharge now and then comes from the vesiculæ seminales, through the urethra; when a person has a costive motion, a drop or

two of mucus, or a ropy fluid proceeds from the vesiculæ seminalis, and is quite a different discharge from that called gleet. Sometimes there will be a discharge from a stricture, but it does not produce infection; and not unfrequently you find a discharge from the urethra, from an abscess of the lacunæ, but not of a virile nature.

3. *Treatment:*—As we have before mentioned, the cure of gleet is a very difficult thing to accomplish, and you must often make use both of constitutional and local remedies.

The constitutional treatment consists in the exhibition of nitric spirits of æther, and the balsam of copaiba; from two to three drachms of the former, a drachm of the latter, in four ounces of camphor mixture, combined with an ounce of mucilage, will form the best mixture. A large spoonful of this may be taken three times a day. If this should not succeed, you must give a quarter of a grain of cantharides, (three times a day,) made into a pill, with five grains of the chio turpentine.

When the constitutional treatment is unsuccessful, you must have recourse to bougies and injections. A bougie should be passed every other day, according to the irritability of the patient, making use of an injection at the same time. Some persons apply to the urethra, the unguentum hydrargyri nitratis; also the unguentum hydrargyri nitrico-oxydi, which should be diluted; a scruple to an ounce may be used, and gradually increased to a drachm. The best injection is that, with the oxymuriate of mercury, about a quarter of a grain to three ounces of water, will be quite sufficient to begin with. If it should not, however, be productive of any good, in the proportion of half a grain to an ounce of water, do not use it any stronger, for it is likely to produce considerable irritation. The sulphates of copper and zinc, and the cuprum ammoniatum have also been recommended.

GONORRHŒAL RHEUMATISM AND GONORRHŒAL OPHTHALMIA.

1. It is by no means an unfrequent occurrence for gonorrhœa to produce ophthalmia and a rheumatic and painful affection of the joints.

Whether it is by the absorption of the poison, or the constant irritation produced by the inflammation of the urethra, I do not know; but certain it is, that gonorrhœa produces ophthalmia and rheumatism, and when not a single drop of matter has been applied to the eye.

2. In gonorrhœal ophthalmia, the inflammation ge-

nerally attacks both eyes, and is of long duration; as is also the rheumatic affection.

The ophthalmia requires the same medicines as are used in gonorrhœa; balsam of copaiba, or some form of turpentine, will be found the best; and to these you should add such local treatment as the state of the inflammation demands. But with regard to gonorrhœal rheumatism, some form of turpentine must be exhibited; either the spirit of turpentine, the balsam of copaiba, or olibanum.

GONORRHŒA, ETC. IN FEMALES.

1. Gonorrhœa in females is rather less violent than in males; and the seat of the complaint is in Cowper's glands, on each side of the urethra, at the os externum.

In gonorrhœa with females, there is a great degree of surrounding inflammation; the orifice of the meatus urinarius, and the lacunæ, discharge matter. There is pain in making water, and in some severe cases it commonly happens that there is considerable irritation of the bladder; of which, the shortness of the meatus urinarius is the cause, the inflammation at the orifice extends down the meatus urinarius to the internal coat of the bladder. The meatus urinarius, Cowper's glands, and the extremity of the vagina, are red, and the carunculæ myrtiformes swollen.

2. *Treatment:*—As to the treatment of gonorrhœa in females, you must depend on diluent drinks, and purgatives, and appease any local inflammation by the use of lotions.

We have no medicine which has a specific action over the discharge in females, and the best lotion you can recommend, is the liquor plumbi subacetatis dilutus; a sponge dipped in this, should be introduced into the vagina, and be allowed to remain there, though often changed.

3. *Pudendal Discharge:*—Children from one year old, and even under, up to the age of puberty, are frequently the subject of a purulent discharge from the pudendum, chiefly originating beneath the preputium clitoridis: the nymphæ, orifice of the vagina, and the meatus urinarius, are in an inflamed state, and pour out a discharge.

The bed linen and the rest of the clothes are marked by this discharge, and from its bearing a strong resemblance to gonorrhœal matter, it has repeatedly been thought by parents that their child has

been injured: suspicion has been excited against some unfortunate person as the offender, and several cases have actually received the punishment of law for the offence of rape, because the medical witnesses were not conscious of the true nature of the affection; therefore, my young friends, be particularly careful to bear this complaint in mind, and never let it be your's to repent the ignominious death of an innocent fellow creature.

4. When a child labours under this discharge, there is a heat of the parts, slight inflammation, and this sometimes increases, and goes on to ulceration.

Notwithstanding violation has been suspected, from the discharge alone, you must be cautious in admitting the evidence of the child itself; for this last paragraph fully shows, that although the parts may be abraded (by ulceration) it is no further proof that a rape has been committed.

5. The treatment you adopt in cases of pudendal discharge, is the lime-water, with calomel, applied to the part; and give calomel and rhubarb, combined with jalap.

LUES VENEREA, OR SYPHILIS.

1. There are two poisons, as I have before mentioned, communicated by venereal intercourse, the one of gonorrhœa, and the other of syphilis.

One, the poison of gonorrhœa, which falling on a mucous surface, produces from that surface, a discharge of matter which is infectious; the other, the poison of syphilis, which applied to the skin, or, as far as is at present known, to any surface, produces inflammation and ulceration, forming a sore called chancre; which, being received into the glands of the groin, occasions bubo; and, being conveyed into the system, circulates with the blood, produces ulceration on different parts of the body, on the mucous membrane of the throat, the skin, the periosteum and bones.

2. We will first go through the various symptoms or consequences of syphilis, and then institute more inquiries on the true nature of the complaint. *Ed.*

CHANCRE.

1. The time at which the effect of the poison that produces chancre, makes its appearance, is uncertain; the chancre, however, generally appears three or four days after connection, and from four to seven days is the average time.

The poison first produces inflammation, then ulceration; the inflammation is attended by a pimple arising from the surface affected, which is like a common pimple, excepting that it is of a deeper colour; instead of being quite florid, it is of a darker hue. The pimple is surrounded by a kind of erysipelatous inflammation; an ulcer forms in the centre, and then a pit forms in the body of the sore, which is often of considerable magnitude, and extends beneath the skin. The surrounding edges of the sore are hard and ragged, its surface is yellow, and the margin red; and if you were asked if a sore was a chancre or not, you would answer, I must feel it first, and not decide merely by looking at it. You would then lift up the part between your fingers, and, if you found a *hardness* beneath, this would be a very good criterion of its being a syphilitic sore, for it is neither in the ulceration, nor in the yellowness of the surface, nor the ragged edges, but in the colour and hardness of the sore, that the characteristic marks of chancre manifest themselves: from the presence of these, you form an opinion, and are enabled to say positively if the sore be a chancre.

2. Chancre assumes very different appearances in different persons, and also in the same person, under different degrees of irritation, and as it is accompanied by more or less of inflammation.

So that if you ask me whether it is possible to determine, that a sore on the penis is not chancre, I should tell you, that I believe it impossible for any man positively to say that it is not.

3. We will now speak of the varieties of chancre, and the causes which more frequently produce them.

4. If the poison be applied to a sore, or an excoriation, it produces ultimately a syphilitic action, as is witnessed afterwards in bubo and secondary symptoms; but it is a long time before the venereal action is excited, and in

these cases, you will find that the sore has neither a surrounding hardness, nor a livid colour.

When the chancre is produced by the application of the venereal virus to an excoriation or tear, there is some difficulty to pronounce its nature; the sore may have the appearance of being syphilitic, but you must hesitate before you give a positive opinion: it requires time to decide it, and you may say to the patient, that there is considerable doubt as to the nature of the sore; it may be simply an excoriation, or on the other hand, it may be a syphilitic sore; your best plan is, merely to apply some simple application to the part, and wait, if it be syphilis, till secondary symptoms appear, when you must have recourse to mercury for the treatment of the complaint.

5. Chancre situated on the frænum, is different to what has been described attacking the other parts.

A chancre in this situation, generally rapidly destroys the part, unless mercury be given early; it is more irregular in its appearance than chancre in other parts, and does not assume a character similar to those seated on the glans.

6. When a chancre is situated on the prepuce, it is also characterized by some peculiar symptoms; and likewise when seated on the corona glandis.

If the chancre happens on the edge of the prepuce, a good deal of effusion into the cellular membrane takes place, and *phymosis* is produced: when the sore is situated just where the skin doubles over the penis, it is extremely troublesome: there is considerable swelling, also a difficulty in drawing back the skin. In this situation it seldom fails to produce phymosis.

If the chancre be on the corona glandis, or between it and the frænum, you often find it extending deep, and producing sloughing of the part, and even of the glans itself, which is not at all an uncommon result of deep seated chancre at the corona glandis.

7. Another circumstance which gives rise to a variety in the appearance of a chancre, is when it ulcerates deeply into the cellular tissue; a chancre on the surface of the skin is very slightly irritable, but if it passes the skin, and extends into the cellular tissue, it assumes a disposition to ulcerate and slough.

A chancre on the skin heals under the use of medicines and external applications; but, if once it enters beneath the skin, and inflames the cellular tissue, it becomes irritable, sloughs, and is attended with danger, the danger arising when the chancre extends beneath the part on which it began.

When chancre is on the surface of the skin, and does not produce deep ulceration, it is a disease slow in its progress, and easy of cure; but if, on the other hand, it extends deeply into the part, it proceeds with rapidity, and those acquainted with the disease dread it, knowing the extended sloughing which will be produced.

8. Of all the causes of varieties of chancre, one of the most common, is the habit and constitution of the patient. The variety is not only produced by the previous mode of living, and the constitution of the patient, but any act of intemperance, excess of any kind, or any thing that hurries the circulation, will alter the action of the part.

So, if two persons be attacked with chancre, the one not of an irritable habit, and the other being very irritable, you will find in the first that there would be scarcely any inflammation, whilst in the second it would be violent, and of an erysipelatous character; indeed, under these circumstances, if the patient be not very carefully managed, he will be in considerable danger.

So a man with chancre to day, which has a healthy appearance, shall to-night indulge in some act of debauchery; to-morrow he will have a bloody discharge from the sore, inflammation round the edges, and an irritable state of the parts, which you will soon find assuming a sloughing disposition.

9. When a chancre goes on to sloughing, there will be considerable previous inflammation, and a great increase in the frequency of the pulse.

The pulse will be generally from 120 to 130; the inflammation of the erysipelatous kind, extending round the chancre, and, in a short time, the sloughing process commences, by which the penis is lost.

10. The time at which a chancre appears after connection, is from four to seven days.

If, however, there be gonorrhœa also, it prevents the appearance of chancre so early; so that if a person is affected with the two poisons, the one delays the appearance of the other.

11. *Treatment:*—The use of caustic to the part, is highly objectionable; and all that you have to do, is to counteract the nature of the venereal virus, by a regular mercurial course of medicine.

Order your patient to take five grains of the blue pill, and a quarter of a grain of opium, night and morning; if you exceed this quantity, let him take an additional pill at bed-time. This medicine continued for three weeks, will be quite sufficient for the cure of the disease. All that you want to do with mercury, is just to keep up a mercurial action on the constitution; the patient may pursue his usual avocations; partake moderately of wine, if so accustomed; and

his diet must be such as will not disorder the bowels, for which reason he should avoid acids and vegetables, but his food may be as usual.

12. In addition to the constitutional treatment of these cases, I make use of local applications, with the view of lessening the irritability of the sore, and to prevent its attacking the neighbouring parts.

The best application you can use, is the liquor calcis, with calomel; the sulphate of copper is too irritating; submuriate of mercury sprinkled on the sore, is sometimes beneficial, but it is generally too irritating also. The unguentum hydrargyri nitrico-oxydi, I have seen of considerable use after a time; but it should not be applied at the beginning of the complaint. The unguentum hydrargyri is a bad application, it is too irritating.

13. Sometimes a chancre gets into a very indolent state, and it becomes necessary to use the nitrate of silver, not, however, with a view to destroy the part, but for the purpose of cleaning the surface and thickening the edges of the wound.

The skin surrounding the part is thin, and by the application of the nitrate of silver, you thicken it, and thus enable it to carry a greater number of vessels to produce cicatrization.

14. When a chancre has healed by your local remedies, you must not discontinue your mercurial course, but continue it for the time I have before stated, to prevent the recurrence of secondary symptoms.

It will be proper to heal the sore as quickly as you can, but you must protect the constitution against the effects of tho venereal virus, by mercurial treatment.

PHYMOSIS.

1. Phymosis is that state of the prepuce when it is so much constricted as to prevent the glans from being uncovered. It sometimes arises from slight inflammation of the cellular tissue, and effusion of serous matter into it; and it not unfrequently happens that phymosis is the result of chancre.

Here I will observe, that should you find, during a mercurial treatment, considerable inflammation produced round the chancre, lay aside the use of mercury.

2. *Treatment:*—The great secret, in the treatment of the disease, is knowing when to discontinue the use of mercury; you should always suspend it when the inflammation is increased during its employment; for if you persevere in the use of mercury, you will only add to the irritation, which will end in the sloughing process, and destruction of the part.

If I were to give to a patient, mercury for chancre on the Sunday, and on the following Monday I perceived swelling and inflammation round the sore, I should immediately lay aside the mercury, give active purges, order poppy fomentations, and the parts to be suspended. The black wash should be applied to the sore, injecting it under the skin, unless it should increase the irritability of the part. After the purges, administer opium in considerable quantities, and when you have reduced the inflammation, have recourse to the mercury again, but not before.

3. When there is phymosis, together with sloughing of the penis, you must stop your mercurial treatment, order the patient the recumbent posture, and the part to be well supported.

In these cases you must use fomentations and poultices of a slightly stimulating kind; you must support a gentle stimulating action, in order to produce a secretion sufficient to support the powers of the part; if you stimulate it too much, the part will be destroyed, and if you omit to do it in a slight degree, there will be no separation of the slough. The poultices we generally employ, are made with stale beer-grounds: carrot poultices are too stimulating. The medicine we give, is five grains of ammonia, with ten of musk, two or three times a day. Forty drops of undiluted nitric acid, to a quart of water, is the best lotion you can apply.

4. When phymosis remains after the inflammatory symptoms have passed away, it becomes necessary to perform an operation for its cure.

The operation is exceedingly simple, it consists in introducing a director beneath the skin, along the glans, till it reaches the corona glandis; this is the extent to which it should be introduced, so that the point should rest against the inside of the prepuce; this being done, a sharp pointed bistoury is to be passed along the director to its extremity, then pushed through the skin opposite to the corona

glandis, and drawn out. But when you have done this, you will find that the internal part of the prepuce is not divided as much as the external, which you are obliged to divide a second time. The next thing you do, is to apply a piece of lint round the prepuce, which is to be supported on the penis by tape; a roller should be applied, so as to make gentle pressure, for the purpose of preventing a secretion from the blood-vessels.

You let the patient remain as long as he can without making water, in order not to disturb the dressings. When you see him on the following day, you soak the penis in warm water, remove the lint, and draw the prepuce gently over the glans. This you should do daily, taking care that the edges of the divided surfaces do not unite. When the part is quite healed, a small aperture only is left in the upper part of the prepuce, which is of very trifling importance.

5. In some cases of phymosis, where the prepuce is naturally long, and only a small division of the skin is required to allow it being drawn back, it is necessary to remove a portion of the prepuce, by circumcision.

PARAPHYMOSIS.

6. Paraphymosis is a tightness or constriction of the prepuce from inflammation, so that after the skin has been pulled back, it cannot be again drawn over the glans penis.

The skin of the prepuce forming a tight ligature round the penis, just behind the corona glandis, strangulates it in the same way as the intestine in hernia.

7. *Treatment:*—The object in your treatment should be to reduce the strangulated part as quickly as possible.

The only proper plan to be pursued is this; you see the penis greatly distended with blood, therefore take hold of the glans between your fingers, and endeavour to empty the vessels by means of gentle pressure. When you have done this for a few minutes, you endeavour to reduce it by pushing the glans back, and, at the same time, taking hold of the skin of the penis, and drawing it forward. By this plan of treatment you will generally succeed, if you see the case a short time after it has happened.

8. If paraphymosis has existed for some days, it will be wrong to attempt reduction by pressure on the glans.

In such cases, you should divide the strictured part with a histoury.

This you do by separating the skin on each side, as much as you can from the stricture; you then insert a director under it, and with a sharp-pointed bistoury divide the stricture, which will allow the skin readily to be drawn over the penis.

After paraphymosis has been reduced, poultices must be applied to the part.

IRRITATING AND SLOUGHING CHANCRE.

1. Every now and then a chancre becomes irritable, from causes already pointed out, and there will be considerable attending inflammation.

Directly you see a chancre assume an irritable character, you must desist in the use of mercury; if not, the inflammation will extend.

2. In your treatment, when the chancre has put on the irritable character, lay aside mercury, and have recourse to simple applications, such as poppy fomentations and poultices, to lessen the irritation.

After you have purged the patient, give opium combined with the liquor ammoniæ acetatis, or some other saline medicine. In this way you will diminish the irritation; and, when the surrounding inflammation is got rid of, return to the mercury, taking care to discontinue it if the irritability should return. The compound decoction of sarsaparilla may also be given, but not solely relied upon.

3. If a person with irritable chancre is guilty of intemperance, under bad treatment, or is careless of his health, the sore will slough, and often end in the destruction of the penis.

Do not think that it is a rare occurrence for the penis to be destroyed by mercury; no, a chancre that has remained weeks in a healthy state, shall become irritable, and, by maltreatment, by the injudicious and improper use of mercury, shall slough, and end in the destruction of the penis; this is not a rare case, and is attributed to the venereal disease, but in reality is an effect of the improper use of mercury.

5. When you see a sore take on the sloughing appearance, the treatment must be changed, the employment of mercury suspended.

What you have to do, is gently to stimulate the part by the nitric acid lotion, in the proportion of thirty to fifty drops of the acid to a

[illegible] xxxv

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

quart of water. Fomentations and poultices must be sometimes employed, but in general they are not good, they are not sufficiently stimulating; warm spirits of turpentine is also sometimes used, and with benefit. You will be obliged to have recourse to a great number of applications, and frequently to change them, before any relief can be obtained.

5. In addition to the local treatment for sloughing chancre, you must support the patient's strength by a nutritious diet; and give stimulants to assist the efforts of nature, and to increase the digestive function and the power of the circulation.

When the patient is very irritable, opium and the compound decoction of sarsaparilla should be exhibited. When the sloughing extends, the ammonia combined with opium, will be found of considerable benefit; five grains of ammonia, and one grain of opium, three times a day. Musk and ammonia is a very serviceable compound, which has considerable influence in sloughing chancre.

Wine and porter must be allowed; porter, if the patient is of an irritable constitution, and wine if he is not: they must be given so as to keep up a vigorous action, but not to excite a feverish heat.

6. By the means we have now laid down, you will generally put a stop to the sloughing stage of chancre, and establish the patient's health.

If the chancre slough early, you should not make use of mercury immediately after the healing process has commenced, but wait for the secondary symptoms.

SLOUGHINGS OF THE URETHRA, ETC.

1. It occasionally happens in syphilis, that an opening in the urethra is formed to a considerable extent.

2. There are three plans of treatment to be adopted in these cases, according to the circumstances attending the apertures.

First:—If the opening is small, a bougie should be passed till there is established a considerable diameter of the urethra, just anterior to the opening, to allow the water to pass freely, when the aperture will soon close.

Second:—If the opening is large, caustic should be applied round the edges of the aperture, a little nitric acid will do, which produces a slough of the cuticle and cutis; when the healing process commences, it should be continued once a week till a cicatrix forms, and draws the part together, and entirely cures the patient.

Third:—If the first or second plan of treatment is not available, the next mode is the Talicotian operation, or the bringing a piece of living skin over the aperture. I performed it once, by separating a small piece of skin from the scrotum, and applying its raw surface to the edges of the wound; this I kept in its situation by three sutures. Adhesive plaster was put over the whole, and a gum elastic catheter kept in the urethra.

3. If there is at the mouth of the urethra a cicatrix at all, or the orifice is small, you cannot cure such a stricture in the usual way.

You must cut off a piece of bougie, and regularly wear it in the urethra, withdrawing it twice or thrice in the course of a day, to allow the urine to pass off. The object is to excite a suppurative inflammation, and thus remove the stricture; for when the suppurative process has been excited, the urethra has not the same disposition to contract as before.

4. Sometimes the extremity of the urethra is closed; after making water in a stream about the size of a bristle, the opening suddenly closes, and the patient cannot make a drop.

If called to such a case, what you do is, not to open the bladder, but you put the point of the lancet into the glans, just at the commencement of the urethra; the urine gushes out by the side of the lancet; and then a bougie requires to be worn, to keep the orifice open.

CHANCRES IN WOMEN.

1. Chancres in women are often worse than in men. They attack the external labia, not unfrequently the inside of the nymphæ, and the os externum vaginæ.

Chancres in women are attended with very little irritation; but, if they exist in a bad constitution, and extend into the cellular tissue, inflammation and sloughing of the part take place; and many lives are lost in consequence.

2. The treatment for chancres in women, is the same as for males.

WARTS.

1. Warts were formerly considered as syphilitic, but you are to learn that they are nothing but a local disease, requiring nothing but local means for their cure.

It is a common opinion that they are propagated by the blood; but it is no such thing; it is by the secretion of matter.

2. Simple local irritation will produce warts. The secretion from the glandulæ odoriferæ, if not cleaned, will give rise to them, or any dirt between the penis and glans. They are also communicated from one person to another.

3. *Treatment:*—The plan of treatment you are to adopt, must depend upon whether the warts are hard or soft.

Soft warts readily bleed, and may be easily removed: the liquor plumbi sub-acetatis dilutus, applied to the surface of them, will remove them; the oxymuriate of mercury will destroy them; I have used the tinctura ferri muriatis, and the black wash and calomel, with good effect. The unguentum hydrargyri fortius destroys them, by producing irritation, inflammation, and sloughing.

The hard warts are more difficult to remove: they had better be poulticed first, and then touched with the unguentum arsenicale, which should contain a drachm of the oxyde of arsenic to an ounce of lard. A few of the warts should be touched with this application in the beginning, and afterwards the whole. It produces inflammation and sloughing of the warts.

SYPHILITIC BUBO.

1. The venereal poison is taken from the chancre on the penis, to the glands of the groin; and, in its course, usually irritates one of them.

Now and then, the matter proceeds through them without producing any irritation, but more frequently it excites inflammation, and the common effects of inflammation, if it is not opposed; that is, if a proper treatment be not pursued, the gland inflames and suppurates.

2. In syphilis it commonly happens that only one gland is affected in either groin; now and then, the contrary

takes place; but, in general, when several glands are enlarged, it is from irritation, and not from the absorption of the venereal virus.

When there is only one gland enlarged, and it goes into a suppurating state, it is usually the consequence of the stimulus of the syphilitic virus. Therefore you may conclude, if several glands be enlarged, that it is not the effect of syphilis.

3. The symptoms of a syphilitic bubo are the same as those of common abscess, with this exception, that there are evening exacerbations.

A syphilitic bubo may be known from a sympathetic swelling in the groin, by its being in a line with Poupart's ligament; and by the presence or previous existence of a venereal sore on the penis.

4. When you are called on to treat a syphilitic bubo, you must pursue a mercurial course, as in chancre; and at the same time you are employing constitutional remedies, local means should not be neglected.

The medicine you should give, is five grains of the blue pill, with a quarter of a grain of opium, night and morning; the opium subdues the disposition to an irritable action being set up in the constitution by the mercury; and, when it is given in conjunction with the mercurial pill, you seldom have those direful effects from the syphilitic disease as when the mercury is given alone. If you find the pain in the evening is not subdued, you may give ten grains of the blue pill at night, and five in the morning.

For local means I would recommend that evaporating lotions should be applied to the part, a bandage should be put round the waist, and a linen, wetted with a lotion, composed of one ounce of spirits of wine to five ounces of water, should be kept to the swelling, and fastened to the tape by bandage.

5. It sometimes happens, notwithstanding the means that you employ, the pain, swelling, and the disposition of the gland to suppurate, increase.

This will be known by sharp pains darting through the part, and a pulsating feel in it; for, when these occur, the suppurative process has generally commenced: you must then apply evaporating lotions and leeches, give active purges, and omit the blue pill. The best purgative you can give, is calomel in combination with jalap.

When the pain in the part has subsided, you must return to the first treatment, which will correct the venereal action.

6. When a bubo acquires a considerable magnitude, it

is usually the result of debility, and is very apt to become chronic; when this is the case, you must give up the use of mercury.

Never continue mercury when a bubo is large, it will only hurry it into a suppurative process; therefore suspend its use, and endeavour to lessen the size of the swelling and the inflammation by lotions, leeches, and acting on the bowels, in order to promote the secretions, for this should be your grand object in all these cases; take care, at the same time, to give that kind of nourishment which will best support the system, without exciting any undue excitement. You should also endeavour to promote absorption of the gland, by the application of the muriate of ammonia.

7. If the means for preventing the suppurative process do not succeed, suppuration has commenced, and matter can be felt fluctuating, it will be right to make an opening for its escape.

The opening should be small, and ought to be made with the lancet, as soon as any pus can be felt; by which plan, the surrounding swelling will be lessened, the inflammation diminished, absorption rapidly produced, and then you can return to mercury for effecting the cure.

8. Syphilitic buboes sometimes become very irritable, therefore, when you have to treat these cases, immediately discontinue the use of mercury, and have recourse to other means.

In order to subdue this irritable state of affairs, give opium and the compound decoction of sarsaparilla, which have the power of suspending the symptoms of syphilis for a time, but will not cure them. When the state of the swelling will allow, you can return to the use of mercury to complete the cure.

SLOUGHING BUBO.

1. If mercury be continued whilst a bubo is suppurating, as soon as ulceration takes place, the sloughing process will follow, and extend over a considerable portion of the cellular tissue.

Destruction of life, in sloughing bubo, takes place from two causes, from the extent of the sloughing process, and hemorrhage from the opening of the femoral artery.

In these cases, you generally see that there is something faulty in the constitution, or that the patient has been injudiciously treated.

2. Your treatment of sloughing bubo must be the same as for sloughing chancre; entirely devoid of mercury.

Exhibit ammonia with opium, and a generous diet, so as to give vigour to the constitution, without exciting any febrile action. The local treatment must principally consist in the application of the nitric acid wash.

3. It sometimes happens when the gland suppurates, and the sloughing process is going on, that secondary symptoms appear.

It is not right to give mercury in consequence of the appearance of secondary symptoms, but you should order the compound decoction of sarsaparilla. When the sloughing process is stopped, and the wound is well, do not give mercury unless the secondary symptoms remain or return.

4. If after the healing of a suppurating bubo, a sinus should remain in the groin, you must direct your attention to its cure.

This may often be done by an injection of about two grains of the oxymuriate of mercury to an ounce of water, or the undiluted tincture of lyttæ, which will generally bring on adhesive inflammation. If these should not succeed, you must depend on the use of a seton, or laying the sinus open, but this latter mode is very rarely adopted.

5. It occasionally occurs that a gland shall project very much after ulceration, so as to require surgical means for removal.

When a case like this occurs, when the gland is insulated, and rises above the surrounding surface, you get rid of it by means of small troches, made of bread and oxymuriate of mercury, which are pointed at the extremity; these are inserted into the gland, and allowed to remain there twenty-four hours. This generally brings on a little inflammation, the death of the gland, and its separation from the surrounding part. Sulphate of copper is sometimes used.

6. After a bubo has suppurated and ulcerated, it now and then assumes the character of what is called a *phagedenic ulcer;* the edges of the sore are thin, rugged, loose, and irregular, owing to a sloughing state of the cellular membrane beneath it.

In these sores, there is an increased number of blood-vessels, over which the skin hangs loosely, and the ragged edges of the wound are owing to a want of action in the part, the blood being retained in it on account of there not being sufficient freedom to carry it into the system.

7. The phagedenic bubo arises from the cellular tissue. and it is difficult to give life to it, because it becomes considerably excavated, and the skin hangs loosely over it.

The best treatment you can adopt, is a saturated solution of the nitrate of silver; dossils of lint, wetted with this, should be daily applied to the surface and edge of the wound, and the yellow wash should also be used. Oil-silk should be put over the wound, to prevent it getting dry; for, if it becomes dry, there is great danger of the gangrene spreading. You should give bark and ammonia, in combination with opium, and do all that you can to restore the secretions, for this ought to be the first principle of your treatment.

SYPHILITIC AFFECTIONS.

1. The venereal poison, when it passes the absorbent glands in the groin, goes into the system, but in its course, affects no other glands than these; it is carried through the thoracic duct to the blood, and when in the blood, it appears to affect but three parts of the body.

2. The three parts of the body capable of being acted upon by the absorption of venereal virus into the system, are, the mucous membrane of the nose and throat, the skin or surface of the body, and the bones with their periosteal covering.

These three are the only parts liable to the syphilitic action after the virus has entered the blood; and, with respect to the organs essential to life, these are not capable of having a syphilitic action excited in them: only in those parts of the body subjected to the influence of external causes, is the syphilitic action observed; the internal organs are entirely free from it; the brain, the viscera of the abdomen, and chest, are never affected by it; even the mucous membrane of the interior of the body is not affected by it.

SYPHILITIC DISEASES OF THE MOUTH AND THROAT.

1. When the syphilitic action is set up in the mouth, either the mucous membrane of the floor of the nose, or the roof of the mouth becomes red and inflamed; a pimple forms on it, and ulcerates; the bony palate is laid bare, and exfoliates.

When the bony palate exfoliates, a communication is set up through the mouth and nose, fluids return through it, and the voice becomes nasal; there is also a most truly offensive discharge. The tonsil glands become affected with sores, which have exactly the character of chancre, having rugged edges, a yellow surface, and a livid colour in the surrounding part; a sense of dryness is felt in the throat, which spreads up the eustachian tubes to the ear.

2. Very severe symptoms of the venereal virus attacking the mouth and throat, are when it proceeds to the pharynx, for it not unfrequently ulcerates completely through it, and the cellular membrane behind, to the vertebra; but the worst effects of all, are produced by its action on the larynx, and unless immediate attention is paid to it, it will destroy life in a very short period.

Attending this last affection, there is always loss of the voice, so that you are obliged to put your ear to the patient's mouth, he speaks in so low a whisper. This effect of the venereal disease more frequently destroys life than any other.

3. The treatment required in syphilitic sore throat, must depend on the parts under its influence, and the nature of attending circumstances.

It will be necessary to make use of mercury, if the part is not too irritable, and the sore has no other character than in a healthy person, and does not affect the mouth more than is generally done when syphilis appears in any other part of the body. Here, you must endeavour to prevent the disease making those dreadful ravages on the soft palate and superior maxillary bone which requires artificial means to close it.

4. Mercurial fomentations are found the most efficient local means for sores of the palate; but, if the roof of

the mouth itself becomes affected, a little diluted muriatic acid will assist exfoliation, and prevent the aperture from being very large.

When an aperture has been produced in the roof of the mouth, I put a piece of lint into the opening, and the consequence is, that the person does not speak through his nose so much, and is not exposed to the observations of his friends. As soon as the exfoliation has taken place, it will be right to introduce some extraneous substance to fill up the aperture; and the best instrument I know, is one contrived by Mr. Weiss, of the Strand.

5. When venereal sores exist on the tonsils, local means are not necessary, for a considerable portion of the tonsils may be lost without producing any bad effects; constitutional remedies alone are generally employed.

With respect to my own treatment, I am always disposed to assist by local means, the healing of syphilitic sores, wherever they occur.

6. When there is syphilitic disease of the soft palate, nothing can be worn, because any instrument, unless kept near the bone, would excite inflammation.

M. Roux, of La Charité, at Paris, in a case of division of the soft palate, performed an operation, for the purpose of closing the aperture, on the same principle as the operation for hare-lip.

7. With respect to venereal affections of the larynx, you must act immediately on the system by the use of mercury.

In my own practice, I use the oxymurias hydrargyri, because it is the quickest in its operation. I also make use of mercurial fumigations. Some give the blue pill and opium, but I prefer the oxymuriate, on account of its speedy effect.

SYPHILIS AFFECTING THE NOSE.

1. The mucous membrane of the nose is liable to be affected by this disease as well as the mucous membrane of the mouth.

Ulceration in this part very speedily affects the bones, which afterwards exfoliate, and the patient will be in danger of losing a considerable portion of his nose.

2. The first circumstance which indicates the existence of this disease, is an incrustation forming in the nose, which, on being removed by the hand, gives rise to a discharge of blood mixed with purulent matter.

In two or three days similar incrustations are formed, and under these, an ulceration takes place, which frequently lays bare the bone, and occasions the process of exfoliation. The bones very often separate by exfoliation, long after the syphilitic action has ceased.

3. The treatment of syphilis in the nose, is similar to the treatment of it in other parts of the body. The constitutional treatment is precisely the same; but in addition to the constitutional treatment, local applications should be employed.

Fumigating the part is attended with some advantage; injecting lotions are also sometimes found to be beneficial. Lotions of diluted nitric or muriatic acid, may be used with a view of healing the sores, and assisting the process of exfoliation. Fumigations are useful in clearing away the nose of the accumulated incrustations. Steaming the nose with hot water, assists in separating the incrustations, and affords considerable relief to the patient.

We have now gone through the ordinary treatment of this disease; and if the bones of the nose have not become affected, there will be but little trouble in effecting a cure.

4. Sometimes you will meet with cases in which very considerable difficulties will be encountered, and in which, the most horrible deformities will frequently be the result. In general you are to consider these deformities, not of syphilis itself, but of the improper mercurial treatment.

The disease usually occurs in the following manner:—A patient undergoes a mercurial treatment, and the sores appear to be cured; but when the mercury has been left off for a time, and the person has returned to his ordinary employments, he finds the discharge again appearing in the nose, and, as it becomes offensive, applies to a medical man. Under such circumstances, it is frequently supposed that he has undergone a treatment which is usually sufficient for the cure of syphilis, the disease is not yet sufficiently subdued, and he is put under a second course of mercury, and from this erroneous opinion proceeds the disease in question. The mercury, instead of assisting the exfoliation which is going on, adds to the inflammation, and produces other and more extensive exfoliations.

5. To prevent the great deformity which will arise in such cases, if an opening be formed through the skin, in the upper part of the nose, a probe should be introduced,

to feel for the loose ossa nasi, which should be removed by a pair of forceps.

In these cases, the nose will be somewhat altered; there will be still some deformity, but not to that horrible extent which ensues, if the skin is allowed to give way in the upper part of the nose. Evaporating lotions should be employed, to prevent ulceration taking place through the skin.

SYPHILITIC ERUPTIONS.

1. Syphilitic eruptions, are the mildest of the secondary symptoms of the venereal disease, and in general admit of an easy cure.

2. The common character of syphilitic eruption is, that they are of a copper colour, rising a little above the surface of the skin, and, if they go on to ulceration, form thick incrustations.

Syphilitic eruptions are attended with very little pain; an itching, rather than a painful sensation, is felt in the part, which increases a little in the evening.

3. There is greater variety in the character of venereal eruptions than in any other symptom of the complaint; not only in appearance, but also in size.

In some you will find the eruptions of considerable magnitude, appearing as if a portion of copper skin was laid down upon the surface, but unattended with ulceration. In others, you will observe deep ulceration, with a ragged edge, in a third, there will be scaly eruptions, covering very large surfaces in various parts of the body.

4. With respect to the parts in which venereal eruptions most frequently appear in the first instance, they are the head, face, and roots of the hair. Incrustations form about the hair of the head, and scabs appear on the forehead, breast, the palms of the hands, and sometimes the soles of the feet.

The palms of the hands are more frequently attacked with venereal eruptions than other parts of the body, because there is more vigour of circulation in these parts; the parts where the circulation is more feeble, are less liable to be attacked.

5. The treatment of venereal eruptions is very simple; you must pursue the same constitutional remedies as have been already advised.

Give ten grains of the blue pill united with opium, at night, and five in the morning. Five grains of Plummer's pill at night, and half a pint of the compound decoction of sarsaparilla daily, is also recommended. The sarsaparilla will relieve this symptom for a time, but the disease will re-appear, and you are never sure that the patient will not return with syphilitic symptoms. These medicines must be continued for about two months; for although the eruption will yield in a short time, unless you continue the medicine till the syphilitic action is destroyed, the disease will return.

6. Venereal eruptions shew an irritable disposition, as well as other symptoms of the disease, from which the parts will be in danger of sloughing.

Whenever this irritable disposition appears, suspend the use of mercury, and give the compound decoction of sarsaparilla alone, in considerable quantities. It will be better not to unite the decoction with mercury in any form: if you add any thing, let it be opium and nitric acid. The opium (if it does not disagree with the stomach) has the power of lessening irritability, and the nitric acid has sometimes a specific action on sores of this kind.

With respect to local treatment, the best application is mercurial ointment with opium; an ounce of the ointment, with a drachm of the extract of opium. This, and the nitric acid lotion, diminish irritability better than any other applications. The epithema composed of the liquor plumbi subacetatis, with the mel rosæ and tinctura opii, is often found to be useful. Carrot poultices, the solution of the nitrate of silver, and a great variety of applications are employed with the same view.

SYPHILITIC DISEASES OF THE PERIOSTEUM AND BONES.

7. The third effect of the syphilitic poison is on the periosteum, and on the bones. It first attacks the periosteum, and the bones subsequently become affected. Those bones which are most external, or have the least to cover them, are more subject to syphilitic disease than the deeper seated ones.

The symptoms which attend this complaint are as follow:—Some weeks after the chancre has healed, the patient experiences in the evening a sensation of pain in the bone, which afterwards becomes the seat of the node. The pain does not immediately produce a swelling;

but in the course of a few days, a painful swelling appears in the evening, which disappears again on the following morning, and leaves no pain. At this time the periosteum only is affected by inflammation; in a short time, a deposit takes place between it and the surface of the bone; this deposit is, in the first instance, only a serous fluid, but a cartilaginous substance is soon secreted, which is gradually converted into bone.

8. *Treatment:*—The treatment of this disease is not different from that which is necessary for the other symptoms of syphilis.

Give the blue pill united with opium, and simply apply evaporating lotions, which will certainly assist in getting rid of inflammation. When the inflammation has ceased, if there is any enlargement of the bone, a stimulating plaster, as the emplastrum ammoniaci cum hydrargyro, should be used.

9. Though the treatment of nodes, when attended to early, is very simple, cases sometimes occur in which considerable difficulty arises.

You will sometimes find a considerable quantity of serous fluid fluctuating between the periosteum and bone, unaccompanied with inflammation and redness of the skin. This may be removed by adding a little to the influence of the mercury. When the fluctuation, however, is accompanied with an appearance of redness in the skin, and much pain in the part, indicating the presence of matter, it will be impossible to produce absorption by any means, and the sooner an incision is made down to the bone, the better. The exfoliation which will afterwards take place, will be proportional to the extent of surface laid bare; and if you delay making the opening till the extent of surface affected is very considerable, you will only be adding to the evil.

10. The flat bones are sometimes the subject of syphilitic action, characterized by the same symptoms as before related. That which is more commonly affected than any other is the os frontis.

It sometimes happens when this disease attacks the flat bones, that it is attended with a very considerable tumour and fluctuation. No incision should be made under such circumstances. Now and then, indeed, the suppurative process takes place, and a most serious disease is the result. When the skin is inflamed, and matter is formed beneath, it will be right to discharge it.

11. It very often happens in venereal affections of the cranium, that matter forms on the surface of the bone,

and the suppurative process also takes place between the dura mater, and the internal part of the skull.

The treatment you are to adopt in these cases, is to apply the trephine: and, by taking out a portion of the exfoliating bone, give immediate relief to the brain, by removing the pressure produced by the matter formed between tho dura mater and bone.

12. Whenever you are called to a case, in which exfoliation of the bone of the skull is accompanied with symptoms of pressure on the brain, you may infer that matter has formed between the dura mater and bone, and it will be right to apply the trephine.

This observation applies not only to cases of syphilitic disease, but to all cases of exfoliation of the bones of the skull, accompanied with coma.

13. We have now gone through the consequences of impure venereal intercourse; and as the student, by this time, has a tolerable knowledge of the results of both gonorrhœa and syphilis, we will now pass on to some general remarks on the true character of the latter.

GENERAL REMARKS ON SYPHILIS.

1. Syphilis, as we have before observed, is a disease communicated by a peculiar morbid poison; the symptoms of which complaint are divided into *primary* and *secondary*.

2. Chancre and bubo are the primary symptoms; sore throat, eruptions, disease of the nose, and nodes, the secondary; and secondary symptoms are the consequences of the absorption of the venereal poison into the system, and its circulation through the blood.

The time at which secondary symptoms usually appear, is from eight to sixteen weeks; sometimes, however, they are protracted, in consequence of tho system labouring or suffering under the irritation of another disease, as diarrhœa for example.

3. Mr. Hunter gave it as his opinion, that a child could

not be affected by syphilis when *in utero;* but, from my own observations, they undoubtedly can be, and are.

Within twenty-four hours after their entrance into the world, such children have the palms of their hands, the soles of their feet, and the nates, covered with copper-coloured eruptions, and the nails at the same time generally beginning to peel off, and if care is not taken, the little patient will sink under the effects of the disease.

In these cases, you give the mother a quantity of mercury, the influence of which is communicated to the child, through the medium of the milk, and it becomes cured of the syphilitic disease.

4. A woman during pregnancy cannot be cured of the venereal disease; you may give mercury, and cause the disappearance of the primary symptoms, but after delivery, the secondary effects are very soon manifested in different parts of the body.

5. To the question, does much inflammation usually attend syphilis? no direct answer can be given, for the degree of inflammation which attends it, is proportioned to the healthy or irritable state of the patient.

In a healthy person, the venereal disease is slow in its progress, and but little inflammation accompanies it; on the other hand, in the irritable person, it is rapid in its progress, and accompanied by considerable inflammatory action; therefore the differences which characterize the syphilitic disease in various persons, do not arise from any peculiarity of the poison itself, but from the peculiar coudition of the person on whom it falls.

6. Mr. Hunter considered syphilis a local disease; but the evening exacerbations formerly mentioned, fever, sore throat, and copper-coloured eruptions, fully prove that there is a constitutional affection produced by syphilis.

7. Whether the matter of a secondary venereal ulcer is infectious or not, I cannot possibly say, but if what I have heard be true, it certainly is capable of propagating the disease.

8. The matter of bubo, as far as experiments have gone, is not infectious; and for my own part, I think there is but very little difference between the matter of bubo and that of a common abscess.

9. Some persons imagine gonorrhœa and syphilis to be the same disease; but the experiments which have been instituted to illustrate this point, decidedly prove the two diseases widely different in their true character.

10. To the question, is chancre curable without the use of mercury? I should reply, that mercury is not always necessary.

Some chancres certainly will not heal without mercury; and this is more especially the case, when they are deep seated, or of long standing; but, on the other hand, when the sore is slight, superficial, and recent, a wash composed of brandy and water, or wine and water, will often cause them to heal without any other application.

11. The modus operandi of mercury has been supposed to be, that of exciting in the nervous system, a general fever, which overcomes and subdues the syphilitic action; but it is impossible to mention to a nicety the peculiar action of this specific for syphilis.

That mercury cures syphilis is well known; but though the disease may disappear quickly after using it, remember that it is not cured; you ought to continue it three weeks for a chancre; a month, for chancre and bubo; and in cases of secondary symptoms, the patient cannot be safe, unless you continue it for five or six weeks. If it disagrees with the patient, it should either be omitted for a time, or united with other medicines.

12. Is any other medicine but mercury, capable of curing syphilis? This is a question which my own practice enables me to answer, and I strenuously and conscientiously advise you always to give mercury both for primary and secondary symptoms, and not trust to any other remedy.

The only permanent or successful mode of treating syphilis, is to excite a slight (not violent) mercurial action; and continuing the mercury for the periods just alluded to: do not produce salivation, for it would rather prove injurious than beneficial. The compound decoction of sarsaparilla, which is so highly spoken of by some, may be used as an auxiliary, but cannot be relied on as a specific.

SCROFULA.

1. Scrofula is a peculiar disease, of an inflammatory character, arising in debilitated constitutions of a peculiar habit.

You will find that scrofulous diseases are inflammatory, that they undergo all the different processes of inflammation, the adhesive and suppurative processes, ulceration and gangrene; but gangrene less frequently than any of the others.

2. The inflammation attending scrofula, differs materially from common chronic inflammation; connected with the latter, there is certain debility, but that debility is the result of intemperance, or change of constitution; whereas in scrofulous inflammation, the weakness exists from birth, and the four usual terminations are imperfectly performed.

The *adhesive matter* secreted in scrofulous affections, instead of being firm, consists of a curd-like matter, easily broken, and very soft; and this is owing to the blood-vessels not entering it. The *suppuration* is not of the common kind, it contains curd-like matter, and is not truly purulent; *ulceration* is slow in its progress; and *granulations* are unequal and slow in forming.

3. The age at which scrofula manifests itself, is during growth; it is extremely rare for it to occur after.

In scrofulous children you will generally find they are characterized by the following symptoms; thin delicate skin; rosy countenance; light coloured and fine hair; long eye-lashes; dilated pupils; clubbed fingers; and a thick upper lip. Again, those who are the subjects of scrofulous diseases, often have follicles on different parts of the body, incrustated with inspissated matter.

4. Most parts of the body are subject to this disease; but some parts do not appear to be so much so, or to be the least affected by it.

The absorbent glands and joints are most frequently attacked; the lungs and the brain not unfrequently. The secreting glands are very rarely affected by it, at least the liver and kidneys, for the testicles and breasts are exceptions.

5. Scrofula differs in different constitutions; it may be of an indolent or irritable kind, but more frequently of the first than the second.

Scrofula of the irritable character is a dreadful complaint, for joint after joint, and various parts of the body become inflamed, whilst in indolent habits, the complaint is sometimes confined to a particular class of parts, and the rest are excluded.

6. You will find scrofula considerably influenced by climate, particularly those climates in which the change from cold to heat, and heat to moisture, are most frequent; and on this account, our own island is favourable to the production of scrofulous disease.

We find cold and moist climates giving rise to the occurrence of scrofulous affections, although it is found that those who live in countries where they are exposed to the extremities of heat and cold, are not the subjects of scrofula. It very frequently occurs that children born in warm climates, and subsequently brought to this country to be educated, frequently perish from scrofula.

7. Although we have proof of some climates predisposing to this complaint, and favouring its production more than others, yet the most striking effects are manifested by the changes of the seasons, after scrofula has occurred.

Thus, for instance, if a child with scrofulous disease be examined in the spring, and it has a gland that is inflamed, the complaint will go on, during the spring, till the summer months, when it will be arrested, and the health of the child improved. In this state it will remain till October and November, and then the child will become worse. From this circumstance a surgeon either gains or loses credit in the opinion of the parents, according to the season he may first be called upon to administer medical advice.

8. That scrofula is an hereditary disease, appears as clear to me as can be; and they that deny it, cannot have given the subject open and candid investigation.

You may prevent scrofula by care, but that some children are originally predisposed to the disease, there cannot be the least doubt; and in such cases, the education and the habits of youth should be so directed as to ward off a complaint, the effects of which are so frequently fatal.

9. *Causes:*—The predisposing cause of scrofula is congenital, or consists in an original fault of constitution.

The exciting causes are whatever tend to produce, or rather increase that debility; such as fever of a specific kind, as measles, scarlet fever, and small-pox.

With regard to the state of body in scrofulous children, the blood is less firm, the crassamentum loosely formed, and coagulating weakly; the quantity of serum abundant; and the solids are feebly formed.

10. *Treatment:*—The principles on which the treatment of scrofula should be founded are three: First, to make better blood: Secondly, to strengthen the solids: and Thirdly, to give vigorous action to the circulation.

To one or all of these principles, every mode of treatment should be referred. The action of the heart and arteries is naturally feeble, the serum of the blood preponderates, whilst the fibrous portion is deficient in quantity, therefore you must fulfil the indications just alluded to.

The first object you should have in view, is to improve the quality of the blood, for without this, nothing else will be of avail.

11. To fulfil the plan of treatment we have mentioned, you must pay particular attention to the diet, exercise, and air. Medicine is a secondary consideration, and certainly may be used with advantage as an auxiliary.

In diet, do not allow vegetables; but let meat be taken in small quantities and often, for when the stomach is but little loaded, digestion goes on better. Some slight stimulant, as good beer or wine, should be allowed also. Milk for breakfast I do not approve of. Animal food should be given in larger quantities to persons with scrofulous disease than to those in a state of health.

Next in importance to nourishment is exercise. Children with scrofulous affections, or even those predisposed to them, should take a great deal of exercise in the open air; but it should not be carried so as to fatigue the body, for when they feel themselves weary they should rest a little till they recover.

The third circumstance to be attended to is air; without good air, all other means are of no use. Moist and cold weather is the worst. The state of the atmosphere you should choose, is that in which the air is dry and warm; a very bleak wind is not desirable. In the latter part of the spring and autumn, the sea shore is desirable, but in cold weather it is not.

12. With regard to medicines they may be occasionally given with a view to improve the digestive powers, and to regulate the secretions, but attention to the three points I have just mentioned, is of the chief importance.

Two grains of calomel and eight of rhubarb should be given once a week, or every ten days, in order to restore the secretions. The daily medicines, for a short time, should be something of a tonic nature; as rhubarb with carbonate of iron, or rhubarb with dried subcarbonate of soda and calumba; infusion of chamomile with a few grains of the hydrargyrum cum cretâ, at bedtime, may also be used; or the oxymurias hydrargyri in the proportion of a grain to two ounces of tincture of bark, a teaspoonful of which should be given twice a day in a glass of the chamomile infusion. If the bowels are costive, the tincture of rhubarb should be substituted for the tincture of bark. The liquor potassæ is also used. The medicines which I employ, are the steel, with rhubarb and calomel, or the subcarbonate of soda, with rhubarb and calumba.

13. A great deal of care should be taken of children originally formed weakly; you should excite no feverish action on the one hand, nor do any thing to debilitate on the other.

Such children should be well clothed, and never exposed to changes of temperature. For this purpose they should wear flannel close to the skin; and, in this case, it should be worn also during the night. If the weather be very warm, calico may be substituted for flannel. The great object is to preserve an equal temperature of the skin, and not to produce perspiration, because that would debilitate. It is right to recommend sea-bathing, the bath should be taken about three times a week, at eleven in the morning. The temperature of the bath should be at 94°; the person should remain from sixteen to twenty minutes in it, and walk afterwards.

SCROFULOUS AFFECTIONS.

1. Having given you a general description of scrofula, we shall now proceed to treat of the several parts attacked by this disease.

GLANDS OF THE NECK.

2. Of the different absorbent glands, those of the neck are most frequently affected by scrofulous disease, owing to their being so much exposed, and consequently so much influenced by the changes of the weathers and the seasons.

Now, when you are consulted in a case of this kind, the symptoms you find are as follows:—In the first place, you learn from the child's mother, that she at first observed a swelling in the neck, which was small, hard, and not painful, nor in any way discoloured, but tender to the touch. Thus the inflammatory process does not go on to the rapid destruction of the part, for the swelling will frequently remain in this state of indolence during weeks, months, and sometimes years.

3. It is a general character with these tumours to remain in an indolent state for a length of time; but owing to accidental circumstances, or changes in the weather, or the state of the constitution, the complaint proceeds with greater rapidity.

If the complaint occurs in a person of irritable habit, it will advance with rapidity; if, on the contrary, the person be of an indolent habit, it will be slow in its progress.

4. When suppuration takes place, there is not much pus produced; its formation is characterized by the common symptoms of suppuration, but in a much milder degree than are usually met with.

In these cases, the suppuration is weak and languid, and it is a long time before matter forms. The suppuration is very imperfect, the pus has not the true character of purulent secretion; it is composed of a curd-like matter, and resembles pus mixed with blood. When suppuration is about taking place, the skin at first has a blush of inflammation on it, then becomes of a livid or purple hue. It frequently happens when the skin is in this state, a long time elapses before it gives way. When the skin, however, breaks, it generally separates to a considerable extent.

5. *Treatment:*—In the treatment of enlarged scrofulous glands of the neck, you must be regulated according to circumstances. If the complaint be of recent occurrence, you must treat it like a case of common inflammation.

You will give rhubarb and calomel internally, and recommend evaporating lotions as local applications. The best lotion you can use, is the liquor plumbi subacetatis, with spirits of wine and water.

6. These glands, however, are apt sometimes, notwithstanding all the means you employ, and all the care that may be taken of the child, to go into the suppurative stages.

In this case, you must give rhubarb and carbonate of soda, twice a day together with a small quantity of the hydrargyrum cum cretâ, (one grain) three or four times in the twenty-four hours.

You must next consider what local treatment to employ if the gland suppurates. You find there is a disposition to suppurate, evaporating lotions will not succeed, and therefore must be discontinued. The moment there is the slightest blush on the part, and sense of fluctuation, indicating the presence of pus, you should make a small opening with a lancet, as in a common abscess; you should not wait for the skin to assume a livid hue; for then you will never be able to prevent scars.

Scars in the neck ought by all means to be avoided, if possible; but the reason why they are so frequently met with, the surgeon waits too often, till the skin has become livid, and then makes a punçture. In this case, he gains nothing by making an opening into the gland; in fact, if the skin be of a livid colour, I advise you then not to make an opening; apply poultices, and let nature effect the opening, for the scar will not be so great then, as if you were to make it.

7. When you are about opening these tumours, you must remember first, the time at which you are to make the puncture, and the direction in which it is to be made; and, secondly, do not omit to squeeze out all the solid matter that may be within the gland.

The instrument with which I open these abscesses, is a cataract knife, and I make the incision transversely, and just in the direction of the creases of the neck; so that when the wound heals, no scar is to be perceived. When the matter is discharged by puncture, apply your finger to the side of the swelling, and squeeze out all the solid matter that may be contained in the gland. If the sac be not carefully emptied of all the solid matter, this substance will keep up considerable irritation, and prevent the healing of the wound; therefore I wish to press on your attention the necessity of attending to this point.

If the wound be indolent afterwards, you had better inject into it a solution of the sulphate of zinc, containing about a scruple of the zinc to a pint of water. Throw a little of this into the wound; it will soon produce healthy granulations, and lessen the discharge if it be copious.

8. With respect to the ulcerative process, there is nothing particular to remark; fomentations, poultices, and the ordinary means, must be had recourse to.

Your object, however, should be to prevent ulceration by the modo of treatment I have laid down, and it is only when it cannot be prevented, that the latter means should be employed.

THE MESENTERIC GLANDS.

9. The glands which are affected with scrofulous disease next in frequency to those of the neck, are the mesenteric glands. In young persons, they are most commonly affected at the age of six or eight months.

The complaint is known by the belly being tumid, and from the tenderness on pressure; attenuation of the skin, voraciousness of appetite; the limbs of the child at the same time wasting. The intestines are equally irregular, being sometimes purged, at others costive. In the motions are occasionally observed earthy matter composed of carbonate of lime.

10. The causes which produce enlargement of the mesenteric glands, arise from disease of the secreting glands of the intestinal canal, such as irritating food, which irritates the mouth of the absorbent vessels of the intestines leading to the mesentery.

With respect to the effects of mesenteric diseases, they consist at first in an interruption of the process of absorption. The chyle travels through the absorbents to the mesenteric glands, and, when some of these are enlarged, the chyle is interrupted in its course.

11. *Treatment:*—In this, your main object must be directed to giving highly nutritious food, for absorption being to a great degree prevented, it is important that nothing but what is very nutrient should be given, so that the constitution may be improved and supported.

Animal food is more nutritious than vegetable food, therefore you give it in preference to the last, and prepared so that it may be easily digested. A little arrow-root may be taken, and nutritious broths. When animal food is given, it is desirable to give some wine and water, to stimulate the stomach to secrete the gastric juice, and to excite the action of the intestines. In exciting the intestines, you have a two-fold object in view; stimulating the absorbents, and producing the peristaltic motion of the intestines.

12. In addition to nutritious food, it is well you should employ some tonic and alterative medicines; and external applications to the abdomen.

The best medicine in this disease, with which I am acquainted, is the oxymuriate of mercury, given in small doses, and in combination with the tincture of bark; one grain of the oxymuriate in two ounces of tincture of bark; or should the bowels be costive, in the same quantity of tincture of rhubarb. The hydrargyrum cum cretâ and rhubarb, given so as to produce an aperient effect, are good medicines. The oxymuriate of mercury should be given with no other view than to improve the secretion from the liver and intestines, and thus producĕ one stool a day. The abdomen should be covered with a stimulating plaster, or frequently rubbed with the hand, in order to produce a gentle action in the part, and excite the absorbents.

13. Dropsy is sometimes connected with this disease. Then paracentesis should be performed, and the patient gets well.

14. Now and then a mesenteric gland suppurates, opens at the navel, and frequently communicates with the intestines, and thus an artificial anus is produced.

In this case, where there is an artificial anus, a large proportion recovers. Poultices should be applied over the opening, and when the inflammation is subdued, strips of adhesive plaster should be applied so as to bring the edges of the wound together, but not until you think all the matter has been discharged from the gland.

DISEASES OF THE JOINTS.

15. Scrofulous diseases of joints vary in their character, according to the stage of the complaint. It generally happens that after a child of a strumous habit has walked a considerable distance, that it complains of pain in the joints; which is accompanied with stiffness and inability to move it.

Under these circumstances, the parent takes alarm, and I may say that this disease can never be too early attended to. The complaint may generally be relieved, if it be attended to early, but, if six weeks or two months elapse before the person applies, he will never recover. A great deal, therefore, depends on early treatment.

16. In these affections, there is but little tenderness at first, and the swelling is very slight; the same local appearance as in health, and but trifling constitutional excitement; but when the suppurative process is about

taking place, a different set of local symptoms present themselves.

When the affection has existed for a length of time, the suppurative process will at last be set up, and the joint will assume the character common to inflammation of all joints. When the suppurative process commences, a great quantity of pus is secreted, if there be much constitutional irritation. Indeed, there may be at first, a copious secretion and slight constitutional derangement; for the suppurative process is not attended with the same constitutional effects as in other parts of the body.

17. We generally let these abscesses open of themselves, as there is little constitutional irritation at first, and the opening cannot be delayed too long. The abscess generally opens in more parts than one.

When strumous abscesses of joints break, which is a long time from the commencement of the disease, the ulceration is often at a little distance from the joint, and there are generally sinuses extending from the point of ulceration to two or three inches up the joint; and thus in scrofulous enlargement of the knee, the abscess generally breaks above or below the patella.

18. With respect to the nature of the complaint, I believe that it is the result of exercise which has produced inflammation of the internal lining of the joints, and frequently of the synovial membrane; and that this inflammation goes on to absorption of the cartilage, and even of the bone.

19. *Treatment:*—Your first indications of treatment, are rest of the limb affected, to reduce any inordinate heat of the part, and counter irritation.

Evaporating lotions of water and spirits of wine, or the liquor plumbi subacetatis dilutus, with spirits of wine and water, should be employed. Rhubarb and the submuriate of mercury, ought to be given once a day, or every second day. If the remedies you adopt to suppress the steps of the disease, do not answer, it will be necessary to employ some local counter-irritant. Blisters, tartar emetic ointments, vinegar poultices, issues and setons, are the various means used for this purpose. If the joint suppurates, it will be best not to apply setons or issues close to the joint, but at some little distance. Blisters may be applied over the joint, but they should not be so large as to produce considerable irritation; they should be kept open by the unguentum sabinæ.

20. When the irritation is lessened, by the means you

have adopted, you must put a splint under the limb, extending from the ham to the heel, and then use friction, so that the joint may be restored to use.

If no friction or passive motion be employed, there will be no chance of restoring the limb.

21. The last circumstance to be considered in this complaint is, when does an amputation become necessary? Formerly limbs were very frequently removed, but in the present day, an affected limb may, with care and management, be often made more useful than an artificial one.

In enlargement of the knee and ancle, it may be necessary now and then to amputate; but it ought never to be done, unless the patient is labouring under great constitutional irritation, which threatens destruction to his life, or the limb has undergone such changes that it is not likely to be useful hereafter.

Ampntation of the fingers and wrist is occasionally performed; that of the arm, very rarely.

DISEASE OF THE HIP-JOINT.

22. Diseases of the hip-joint are more liable to be mistaken than scrofulous disease of any other part of the body; much error prevails with respect to them.

23. The first circumstance which indicates disease of the hip-joint, is some degree of lameness, and pain in the knee. The motions of the joint are impeded; extension is performed with difficulty; the child's knee is bent, and the heel on the diseased side scarcely rests upon the ground: there is also great difficulty experienced in the flexion of the joint.

When you endeavour to ascertain whether disease of the hip-joint exists or not, you should first place the patient on his back, and examine whether the sides of the pelvis are equal; the pelvis will be lower on the diseased side. Having placed the patient in the recumbent posture, you will then bend the knee towards the abdomen, which, if there be disease of the hip-joint, will occasion considerable pain. In rotating the joint also, much pain will be excited in consequence of its stiffened state. You will then turn the patient on his face, and observe whether the nates are lower on one side than on the other; there is generally a difference of an inch or more on the side affected. These are the common symptoms of this disease.

24. Abscesses are frequently formed in diseases of the hip-joint, which take different directions; in general, their course is down the thigh, between the trochanters and the outer surface of the thigh, where they break.

Sometimes they occur in the upper part of the thigh; sometimes they break into the rectum; and in other cases, into the vagina.

25. The cause of this disease, is in general too much exertion for the strength of the patient, which produces inflammation of the synovial surface.

On dissection of these cases, you find in the first place, a quantity of adhesive matter is poured out about the joint; the ligaments are much thickened; the synovial surface is inflamed, and often slightly ulcerated: and, lastly, the bone itself is sometimes absorbed; not only the head of the bone which enters the acetabulum, but the acetabulum itself.

26. *Treatment:*—With respect to the treatment of this disease, you will observe, during the inflammatory stages, the same plan which I have recommended to you in the treatment of scrofulous complaints.

In the first place, the recumbent posture, and as much rest as possible, should be strictly enjoined. If there is much pain, leeches should be applied; evaporating lotions should also be employed in the first few days. If you do not find the inflammation yield in a few days, it will be right to put a large blister over the part, and to keep it open with the unguentum sabinæ, for a considerable time. The surface kept open with the savine ointment, should not exceed the size of a crown piece, as you might otherwise produce too much irritation, and do more harm than good. Issues and setons are more applied here than in any other diseases of the joints. It is better to regulate the degree of irritation, in this way, than to endeavour to produce violent effects.

27. With respect to the treatment of abscesses, it is right in all diseases of joints, and especially in diseases of the hip-joint, to postpone the opening of them as long as you can; unless the abscess is very large, it is best not to open it at all.

The irritation will be very slight if you delay the opening, but if you make it early, the effect will be just the same as if you were to cut into the joint, it would excite much irritation in that important part. Give time for nature to perform her task, and to fill the joint itself with adhesive matter, as the abscess extends down the limb to a great distance from the joints.

28. When the disease is protracted, it would be cruel and injurious to the child to keep it in a state of perfect rest; it, therefore, should be allowed to use a crutch.

Exercise will prevent the derangement of the general health, and the depression of mind, which arise from long confinement. If the disease has continued for any length of time, it is not to be expected but that some lameness will remain.

VERTEBRAL DISEASES.

29. A disease similar to the disease in the joints, occasionally occurs in the spine, sometimes beginning in the vertebral substance, sometimes in the bone itself.

It is manifested in the following manner:—The child complains of a fixed pain in the spine; the pain, however, is not confined to the spine, but it extends down on each side, in the direction of the nerves arising from the spinal marrow. There are weakness and pain in the back; pain on the sides, more on one side than on the other; and the nerves arising from the vertebral marrow, are inflamed in consequence of the pressure on the membrane of the spinal marrow. After a little time, there is a projection of the spine backward, one, two, or three of the spinous processes projecting more than the others. It usually happens, that the lower extremities become affected; sensibility is diminished, and the muscles lose a portion of their voluntary power. The patient sits with his limbs drawn under him, and his heels towards the nates, and there are, besides, spasmodic twitchings of the limb.

30. There are particular symptoms in this disease, which indicate the vertebræ affected.

If the lumbar or dorsal vertebræ be affected, there will be difficulty in discharging the urine, and the fæces will at length pass off involuntarily. When the disease is in the neck, the head is the only part of the body, except the vital organs, which retains its power; volition is lost in all the parts of the body below the seat of the disease, and the patient is reduced to the most abject state of helplessness.

31. This disease of the spine is very apt to produce abscesses, in the form of psoas and lumbar abscesses; which very often occasion a very considerable loss of substance.

32. *Treatment:*—The cure of this disease is effected by the upper portions of the vertebræ falling on the lower, and in this way giving rise to anchylosis.

To obtain this, you should keep the spine of the child as much as possible at rest; with this view, the child should be kept as steadily as can be, in the recumbent posture, so that the vertebræ may be suffered to fall into contact, and by coalescing, effect anchylosis. If you attempt to keep the spine straight, you will defeat the object of nature; do not keep the patient in a directly straight line, but rather assist nature in producing the union of the vertebræ.

33. In these cases, great attention should be paid to the posture, rest, and general health of the child: blisters, setons, and issues, are commonly employed, but they do more harm than good.

With respect to the health, the child should have the best nourishment, taking care to avoid every thing which may produce feverish excitement; likewise airings in a carriage, care being taken that the body should not be shaken.

If the child cannot be kept at rest, if the parents are unable, or refuse to observe these instructions, the next best treatment will be to apply one of Callow's backs, which is worn upon the spine, and fixed round the pelvis and shoulders.

34. The part of the spine affected is of no importance, with respect to the cure: whether it be the neck, back, or loins, there will be no difference as to treatment, except in the form of the mechanical means which may be employed.

As to avoiding deformity in these cases, that is out of the question, for in all of them deformity is inevitable: whatever you do, this cannot be prevented.

PSOAS AND LUMBAR ABSCESSES.

35. By these terms are understood chronic collections of matter, which form in the cellular substance of the loins, behind the peritonæum, and descend in the course of the psoas muscle.

Disease of the ligaments of the spine, commences between the ligaments and the surface of the intervertebral substance. It is very often nothing more than an abscess, from the disease we have just spoken of, having its origin in inflammation of the spine, and the intervertebral substance.

When the matter has collected, it spreads until it reaches the origin of the psoas muscle, which passes into ulceration, and forms a bag, surrounded by a complete ring. The abscess proceeds as far as the tendon of the muscle, by Poupart's ligament, and its further progress is restrained by the tendon; when it passes under Poupart's ligament, between the femoral vein and the symphysis pubis, it has generally attained considerable magnitude, and has the appearance of femoral hernia; but the marks which distinguish it, are the pain in the loins, and the great constitutional derangement which the patient suffers in the progress of the complaint.

36. In these affections, if the disease forms on the side of the vertebræ, instead of the fore part, it is termed a lumbar abscess, instead of psoas.

37. *Treatment*:—With respect to treatment, you must allow the abscess to take its course; very little can be done in this disease, until it has acquired considerable magnitude.

The use of issues is sometimes recommended in these cases; little can be done, however, to prevent its progress when it is once formed, and I do not know that any advantage is to be derived from counter irritation.

38. The treatment I should recommend, is to let the abscess proceed until you observe a redness or blush of the skin, and then adopt Mr. Abernethy's plan of making a valvular opening into the part, so as to discharge the matter, and close the wound immediately.

The danger does not arise from the quantity of matter accumulated, but from the irritation produced by the attempts of nature to close the abscess, and fill the cavity by the process of adhesion.

39. Four days after the abscess is opened, violent symptoms of constitutional irritation are apt to come on, such as great depression of strength, loss of appetite, and the patient is soon reduced to the lowest extremity.

It is extremely desirable to prevent the occurrence of these symptoms; and the plan suggested by Mr. Abernethy is the best that has been proposed, with a view of preventing them. You are to make the opening obliquely, apply a bandage round the abdomen, and endeavour to bring the sides of the abscess as close together as possible, in order to promote the process of adhesion. If ulceration

should take place, the matter will be in this way discharged, and all you can do, is, to support the efforts of nature.

40. In addition to the operation you adopt for this disease, I advise you to use all the means which I recommended in scrofula, for the purpose of improving the general health of the patient.

A considerable degree of rest should be enjoined. You may also inject the abscess with a solution of sulphate of zinc or alum; it promotes the adhesive process in the interior of the abscess, glues its sides together, and lessens the purulent secretion.

RACHITIS.

1. This is a peculiar disease produced by debility of the vascular system; and is commonly called rickets.

2. Rachitis first manifests itself in disease of the mesenteric glands; the abdomen is increased in size, the head is considerably enlarged, and out of proportion to the rest of the body, so that the disease is often mistaken for hydrocephalus.

The chin is expanded, the sides of the jaws are brought together, and the whole of the features are altered, so that, in general, by merely looking at the face of a patient, you infer from it the nature of the complaint.

3. In rachitis, an alteration takes place in the form of the spine, which has a double curvature, above and below, like the italic *S*: and the other parts of the body are consequently affected by the distortion.

Under these circumstances, nature endeavours still to preserve the perpendicular line of the body, by producing a second curve as soon as one begins, and the equilibrium is maintained, though there is a considerable variation in the form of the spine. The scapula is also considerably projected; but pressure on the shoulder, with a view of remedying this defect, is a most absurd and unscientific practice; it may give pain, but can do no possible good. The spine, in these cases, has given way in two directions, and the ribs on one side are more curved than on the other. This incurvation of the ribs occasions the alteration in the form on the scapula. The anterior part of the chest is extremely projected;

the sternum is sometimes sunk between the cartilages of the ribs, and sometimes advances so as to form what is called a chicken breast.

In addition to the parts already mentioned as influenced by rachitis, the bones of the extremities all undergo a curvature.

4. When this disease has continued for any length of time, absorption of some of the bones takes place, and nothing but the cartilage remains; such are the miserable changes to which rickety children are subject.

The cause of all these changes is a great deficiency in the powers of the circulation, in consequence of which, the bones lose their phosphate of lime, and become spongy at the extremities, and the joints, therefore are exceedingly enlarged. The ossific matter binds down the cartilages, so as to prevent their expansion, hence arises a diminution of the ossific deposit, which leads to the alteration in the form of the bones.

5. *Treatment*:—With respect to the treatment of these cases, you will observe the same general principles which I laid down for scrofula, and you will also resort to mechanical means. If the head is affected, you must direct your mechanical means for its benefit.

For the enlargement of the head, it will be right to use some sort of pressure; a cap or roller round the head may be worn, for the purpose of preventing the growth of the head, by the pressure of the arteries of the brain.

6. The next point of your treatment, is to prevent the curvature of the spine.

For this purpose, it has been the practice to keep children in the recumbent posture for a great length of time. This is a plan which I by no means advise; exercise should be freely allowed, taking care only that it be not protracted so as to occasion fatigue. At the same time exercise is taken, you must preserve the spine in a straight position, by giving artificial support. This may be effected by two springs of steel, added to the stays, one on each side of the spine, which may be worn by the patient in any position, Callow's back is a good mechanical contrivance; it fits to the back of the patient, and is passed round the pelvis, without pressing on the sides; the pressure is on the crista of the ilium, and not on the sides.

7. In the use of mechanical means, the great object should be, not to force the child into a constrained position, but merely to prevent inclination on one side or the other.

"Extracts from Sir A.C. on Dislocations

"On Examination of the Bodies of persons who die in consequence of dislocations arising from violence the head of the bone is found completely removed from the socket. Capsular ligaments torn transversely to a great extent. The round ligament, as the ligamentum teres of the hip, torn thro'. The tendon of the biceps in dislocation of the os humeri, remains uninjured as far as I have been able to ascertain by dissection. Although I should be sorry to be understood to say that this is universally the case." page 7.

DISLOCATIONS.

1. A dislocation is the removal of the articulating portion of bone from that surface to which it is naturally connected.

2. A limb, when dislocated, is generally rendered shorter than before, but there are two dislocations in which the limb is lengthened.

As in the dislocation of the femur into the foramen ovale, and the dislocation of the humerus into the axilla.

3. In dislocations, the axis of the limb is altered, and it becomes unnaturally fixed.

In the first moments, however, of the dislocation, considerable motion remains, and the position is not so determinately fixed as it afterwards becomes. The motion of the joint is lost, flexion and extension are slightly allowed, but rotation is completely prevented.

4. In the early days of a dislocation, there are many circumstances which render it difficult to decide on the absolute nature of the injury; and the difficulty is increased exactly in proportion to the time that has been allowed to elapse after the accident.

There will be found considerable swelling, and dull confused pain; or indeed, severe pain when the nerves are pressed upon. There will also be found a slight crepitation, when dislocations have only occurred for a day or two, which is owing to the escape of synovia from the joint into the surrounding cellular membrane, this becomes thickened by the absorption of the more fluid part, and crackles under motion; a circumstance which every practitioner should be aware of, as this is often mistaken for fracture; but it does not give that peculiar grating feel which the extremities of a fractured bone produces.

5. Under dislocation, the parts are more or less injured, according to the severity of the accident; more especially the muscles and tendons connected with the joint.

If a dislocation is not reduced, most curious changes take place.

The head of the bone becomes much altered in figure, and this alteration is very much influenced by the structure of the part on which it presses, whether on bone or on muscles. Changes likewise take place in the soft parts, new capsular ligaments of condensed cellular tissue, are formed by the pressure, the tendons of the muscles, which were torn through, become united, and the muscles accommodate themselves to their new axes, the limb is thus newly, yet permanently established.

6. *Causes:*—Although dislocations generally arise from violence, and are accompanied by laceration of the ligaments of the joint, yet they sometimes happen from relaxation of the ligaments only. They also arise from other circumstances.

This is especially likely to occur where there has been abundance of synovia secreted, which must have the effect of weakening the articulation. The patella is sometimes dislocated from this cause.

If muscles are put and kept long upon the stretch, their power of contraction is in a great measure lost; or, if from paralysis, they lose their action, a bone may be easily dislocated, and reduced as quickly.

Dislocations frequently arise from ulceration of the joints, by which the ligaments are detached, and the bones become altered in their relation to each other; this frequently happens in the hip.

7. Dislocations are sometimes accompanied with fracture. At the ancle joint, a dislocation seldom occurs without fracture of the fibula; and sometimes the acetabulum is broken in dislocations of the hip-joint.

When a bone is both fractured and dislocated, it is best to reduce the dislocation without loss of time, taking care that the fractured part be strongly bandaged in splints, to prevent any injury being done to the muscles: for, if this be not done at first, it cannot afterwards, without, in all probability, disuniting the fracture.

8. A dislocation may be *partial*, that is, resting in part on the natural articulating surface; or *complete*, when the two surfaces are perfectly separated.

9. Dislocations may also be *simple* or *compound;* the first is a simple separation of the surfaces; and the compound is that in which the articulating surfaces are not only displaced, but in which there is also a division of the integuments and capsular ligament, by which the cavity of the joint is laid open.

Compound dislocations are generally attended with great danger, When the muscles are unprepared dislocations ensue from very slight accidents. On the contrary when the muscles are prepared for resistance the greatest force will hardly produce the effect. The execution of Damien is illustrative of this position. p. 18.

Dislocations are rare in old persons in consequence of the softened state of the extremities of the bones making them more liable to fracture. They are also rare in very young persons in whom the bones more generally break or their Epiphyses give way. p. 19.

from the inflammation of the lacerated ligament and synovial membrane which speedily succeeds; this is soon followed by suppuration, and granulations arise from the surface of the secreting membrane.

Poultices were formerly used to these cases; but they ought not to be employed. After reducing the dislocation, bring the integuments closely together by adhesive plasters, and let the joint remain undisturbed for several days, and it is probable that adhesion will take place.

If there should be great difficulty in reducing the dislocation, as, for example, in the ankle, it is better to saw off the protruded portion of bone, especially when there is great spasmodic action of the muscles; the bone afterwards granulates, and if passive motion be used in proper time, a very useful joint may be restored.

10. *Reduction:*—The difficulty in reducing a dislocation is in proportion to the time which has been allowed to elapse after the accident. Difficulties also arise from other causes.

In recent cases, reduction is easily effected, but if it has happened a few days, or at most, a few weeks, they are reduced with great difficulty. In those cases, where it has been said the dislocations have been reduced a long time after the accident, the patient has never been able to use the joint extensively.

11. Muscular power in your patient is a very great difficulty; for the exertion necessary to reduce the dislocation, must necessarily be very great.

In muscular persons, the reduction of the humerus ought never to be attempted after three months; but, if the patient be less muscular, four months should be the utmost limit. In the dislocation of the thigh, two months may be fixed on as the time, beyond which it would be wrong to make any attempt, except in a person of a very relaxed fibre, when a little more time may be allowed.

12. Difficulties in reduction, likewise arise from the head of the bone catching against the articulating cavity.

As in the dislocation of the thigh bone into the foramen ovale, and ischiatic notch, where it is necessary to raise the head before it can be returned; or where the head of the bone is larger than its cervix, as in dislocations of the radius.

13. The peculiar ligaments of the joints sometimes prevent the reduction of dislocations.

This is particularly to be noticed in the knee, where the bone should be moved in such a direction as to relieve that ligament which remains entire. The ligaments of the ankle joint are of extraordinary strength, and the bones of this joint will often rather break, than their ligaments give way.

14. The principal obstacles, however, which you will meet with, to the reduction of dislocations, is the powerful, rigid, involuntary contractions of the muscles, and this power is proportioned to the length of time which has elapsed after the injury.

This powerful contraction is to be overcome by promoting general relaxation. This must be effected by constitutional remedies, and gentle but continued force of extension; hence the great advantage of considering the power and direction of the larger muscles previous to making any attempt at reduction.

15. The most powerful mechanical means, if not assisted by constitutional remedies, will sometimes fail; you must therefore have recourse to such treatment as will produce a tendency to syncope, and this necessary state may be best induced, either by nausea, bleeding, or the warm bath.

Bleeding I consider the most powerful; but in recent cases it is not required. That the effect may be produced as quickly as possible, the blood should be drawn from a large orifice, and the patient kept in the erect position.

Where the warm bath is thought preferable, it should be employed at the temperature of 100° to 110°, and, as the object is to produce fainting, he should be kept in it until this is effected, then immediately wrapt in a blanket, and the mechanical power applied.

Nausea may be kept up or produced by giving small doses of tartarized antimony, as a quarter or half a grain every five minutes; and a good proof of the effect of nausea is, the man's being unable to lift his hand on a level with his shoulder. As its action is uncertain, it is best to use it, with a view of keeping up the nausea first produced by the two preceding measures.

16. Another mode of relaxing the muscular power is, by gentle and steady extension.

The force should be gradually applied, and it is in this way only that that state of fatigue and relaxation is produced which is sure to follow continued extension, and not attempt at once to overpower the action of the muscles.

The most effectual mode of tiring the muscular power is by the pullies, which have this advantage over extension made by assistants, that your force is *gentle* and *continued*. First pass a wetted roller round the limb, and over this, buckle on the leather with the rings

When a dislocation has long existed, difficulties arise from three other circumstances - 1st The extremity of the bone contracts adhesion to the surrounding parts - 2nd The socket becomes sometimes so filled with adhesive matter, that if reduced it could not remain, and the cavity is even sometimes in part filled with ossific matter as to render it incapable of receiving the head of the bone -

3rd A new bony socket sometimes formed in which the head of the bone is completely confined p. 23 & 24 -

Pulleys are preferable to the Employment of assistants whose Efforts are sudden. violent, undirected & uncombined. Their muscles also fatigue, as well as those of the patient. p27.

In reducing dislocations the limb shd be kept in a position between flexion & Extension to relax the stronger opposing muscles. p.27.

Great advantage is derived from directing the patients to other muscles by relaxing those opposing the Efforts of the Surgeon. p.28

The strength of the muscles & ligaments may be greatly promoted by pouring cold water on the limb, & the subsequent Employment of friction. p.29.

Dislocations of long standing should be allowed to remain as more injury often results from the violence used in the attempt at reduction. - p29.

In such cases, the surgeon shd advise motion of the limb & friction of the injured part. p 30.

to which the pullies are to be fixed. Having fixed them on, draw the cord very gently, until you feel the muscles making some resistance, then rest two or three minutes and extend again; and so on until you see the muscles beginning to quiver, and by a little further extension they will be overcome, and the bone easily slips into the socket. The best place to fix the pullies, is on the bone to be reduced.

It is not necessary, in recent dislocations, to use pullies, excepting those of the thigh, in which they should always be used: and they should be used also in dislocations of the shoulder, which have remained long unreduced.

17. After lessening, or indeed, overcoming the action of the muscles, you must effect the reduction, by fixing one bone and drawing the other towards the socket.

Great attention should be paid to the fixing of that bone in which the socket is placed; for without this precaution, you may often be foiled in your attempts.

18. After the reduction is effected, the part from which the bone was dislocated must be well secured, as without the aid of bandages, the bone will not remain in its situation until the muscles surrounding the joint recover their action. Rest is also necessary for some time, to allow the ruptured ligaments to unite.

Rest is the principal thing to be attended to, and guard against an excess of inflammatory action in the joint and surrounding parts, by an evaporating lotion, as the white wash, and by the application of leeches, if necessary.

DISLOCATIONS OF THE SPINE.

19. If dislocation of the spine does ever happen, it is a very rare accident, and I have never met with a case. The accidents on which we are about speaking, would be far more properly called, *fractures of the vertebræ.*

It is possible that a dislocation of the cervical vertebræ might happen, as the articulating processes are more oblique in them than in the other vertebræ.

20. Dislocations of the spine seldom occur without a

fracture of the articulating processes, or of the arches of the vertebræ.

When the cervical and dorsal vertebræ are fractured, the spinal marrow is generally torn; but in the lumbar vertebræ, the medulla spinalis becomes firmer, and is not so easily lacerated.

21. Whenever fracture happens, displacement is generally the immediate result, and the spinal marrow becomes compressed, by the arches of the vertebræ.

The symptoms produced by pressure on the spinal marrow, are a loss of sensibility, and of motion in the parts supplied from that portion of the medulla spinalis, below the accident.

22. The consequences from compression on the spinal cord, depend entirely on its approximation to the brain. If the upper vertebræ be injured, sensation is lost in the upper extremities; if the dorsal vertebræ, or upper lumbar, the lower extremities become insensible; and if the lumbar be injured, the fæces pass involuntarily, and the urine is retained.

These phenomena may be accounted for in this way; the nerves of volition supplying the sphincter ani are injured, and the power of retention is lost, whilst the involuntary peristaltic action of the intestines continues; the nerves supplying the acceleratores urinæ, being in part derived from the cauda equina, have their functions destroyed, the will has no influence on the bladder, and the evacuation of the urine is prevented, being opposed by the elasticity of the urethra. When the patient becomes very weak, and is almost dying, the urine passes away stillatitiously, from the elasticity of the urethra being diminished.

23. The time you may expect a patient to live after accidents of the present kind, will depend very much whether the injury is near or distant from the cervical vertebræ; whether the displacement is slight or otherwise, and upon the degree of injury the spinal marrow has sustained.

Persons live sometimes three or four weeks after the accident, but if any of the cervical vertebræ be broken above the fourth, death is immediately the result; the phrenic nerve is paralysed, and the action of the diaphragm consequently suspended, and respiration can no longer be performed.

24. It has been attempted in these cases of displace-

ment, to remove the portion of bone which presses on the cord; but hitherto without success.

DISLOCATIONS OF THE RIBS.

25. Dislocations of the ribs have been described by authors; but I have never seen such a case. There is frequently of the cartilages, which is mistaken for dislocation of the ribs.

This arises from constitutional weakness, the arch of the rib is diminished, the sides flattened, and therefore the extremity of the ribs with the cartilages are thrust forward. It is generally the result of rickets.

26. Very rarely, a cartilage may be torn from its connection with the sternal end of the rib, and projects over its surface. The same treatment would be necessary as in fracture of the ribs.

Desire the patient to make a deep Inspiration, then depress the projecting cartilage, put a wetted paste-board splint upon the part, and apply a flannel roller over it.

DISLOCATIONS OF THE CLAVICLE.

27. The sternal end of the clavicle is dislocated in two directions, forwards and backwards; most frequently forwards, when it is thrown upon the fore and upper part of the sternum.

This accident may be easily distinguished by the swelling seen on the upper part of the sternum, and, if the fingers be carried upon the surface of the sternum upwards, this projection stops them; but if there be any doubt about it, place your knee against the spine, draw the shoulders backwards, and the clavicle sinks into its natural situation; but immediately you remove the extension, the swelling again protrudes. If the shoulder be elevated, the projection descends, if the shoulder be drawn downwards, the extremity of the clavicle passes upwards, towards the neck. The motions of the clavicle are painful, and those of the shoulder performed with difficulty.

28. When the clavicle is dislocated before the sternum, the reduction is easily effected in the way just pointed out; apply the clavicle bandage; and there is no occasion to support the arm.

29. The second dislocation of the clavicle is backwards, behind the sternum. These are very rare occurrences, and are generally the result of deformity in the spine, consequently there is no mode of reducing them.

These cases do not produce much difficulty of breathing, because the trachea is pushed to the other side; but the œsophagus is compressed, and produces great difficulty of swallowing.

30. The most frequent dislocation of the clavicle, is the scapular end.

This dislocation may be detected by putting the finger on the spine of the scapula, and tracing it forwards towards the acromion, where the finger will be stopped by the projecting portion of the clavicle. The shoulder will be depressed and drawn inwards towards the sternum, and from the projection of the clavicle will appear flattened, something like the dislocation into the axilla.

31. In the reduction of this dislocation, you may use the mode that was employed in the dislocation at the sternal end.

Let the knee be put between the patient's shoulders, and draw them backwards and upwards, and the clavicle immediately is brought into its place; then put a thick cushion into each axilla, to keep the scapula from the side, to raise it, and to prevent the axilla from being injured by the bandages. Then the clavicle bandage is to be applied, and its straps should be broad enough to press upon the clavicle and scapula. The arm should be supported in a short sling, so as to keep the scapula well up.

DISLOCATIONS OF THE HUMERUS.

32. The humerus is liable to be dislocated in four directions, viz. into the axilla, forwards under the clavicle, backwards on the dorsum scapulæ, and partially.

33. *First Dislocation:*—The most common dislocation

of the humerus, downwards and inwards into the axilla.

In this case, the bone rests on the inner side of the inferior costa of the scapula.

34. This dislocation may be known by the projection of the acromion, by the natural rotundity of the shoulder being lost, by the deltoid muscle being flattened and dragged down with the head of the bone.

The arm is rather longer than the other, and the elbow is carried from the side. Although the arm is longer than natural in a recent dislocation, yet if the accident has been of some duration, the head of the bone becomes imbedded in the softer parts, and the limb is shortened. The elbow is with difficulty brought to the side, from the head of the bone being in this attempt pressed upon the axillary plexus of nerves, and the patient will generally come to you, supporting the arm with the other hand, to prevent its weight pressing upon these nerves. If the elbow be carried outwards, nearly at right angles with the trunk, the head of the bone can be distinctly felt in the axilla. The raising the elbow throws the head of the bone downwards, and more into the axilla, and can therefore be more easily felt in the axilla. The motion of the joint upwards and outwards is in a great measure lost, and consequently the patient cannot raise his hand to his head. The central axis of the limb may also be observed to run into the axilla. There is usually a numbness in the fingers from the pressure of the head of the bone on the axillary plexus.

35. The common causes of dislocation of the humerus into the axilla, are, falls directly on the shoulder; falls upon the hand while the arm is much raised, and by a fall upon the elbow when the arm is raised from the side. They are also very apt to recur from very slight causes.

36. If the muscular power is considerable, or if the accident has occurred a few days, the reduction is usually easily accomplished.

Place the patient in a chair, let the scapula be well secured by a bandage passed over it with a slit in it to receive the arm, and buckled over the acromion; this keeps the bandage close up in the axilla, and more completely fixes the scapula; or it may be done with a towel folded round the arm, just above the elbow, to protect the skin, and upon this a strong worsted tape is to be fastened with what the sailors call the clove-hitch; the arm should be raised at right angles with the body, or a little above it, to relax the deltoid and super-spinatus. Two persons should now make extension from the bandage fastened to the arm, and two from the scapula bandage, with a steady and equal force. After the extension has been made a few minutes, the surgeon should place his knee in the axilla, resting his foot on the chair on which the patient sits, and raise his knee by extending his foot; and, placing his hand at the same time on the acromion, he pushes it downwards, when the head of the bone usually slips into its place. While the extension is making, a gentle rotatory motion will diminish the counteracting power of the muscles, and assist the reduction; the fore-arm should be bent to nearly right angles with the upper arm.

37. If the limb has been a long time dislocated, and if the muscles are so firmly contracted, that the force to be applied in the way we have just recommended does not succeed, the reduction must be attempted by pullies; more on account of employing the force gradually and equally than of their increase in power.

The patient should sit between two staples fixed in the wall, the bandages are to be applied in the way before described, and the surgeon should draw the pully himself, and the degree of extension be gradually increased, until the patient complains of pain, then stop a little and extend again. Here I may mention to you the great advantage to be gained in engaging the patient's attention, and directing it to some other object during the attempt at reduction. Then extend the arm again, and continue it until the patient again complains; and thus, at intervals of three or four minutes, you may continue the extension for a quarter of an hour.

If this plan should not answer, you must use the constitutional measures before pointed out, and try the extension again.

38. If the patient should be an elderly lady, or a relaxed emaciated person, you may generally succeed in reducing the dislocation by more simple means.

Put the person in a low chair, carry the knee into the axilla, by separating the arm sufficiently from the side, and let your foot rest on the side of the chair, take hold of the arm firmly, just above the condyles, with one hand, and place the other on the shoulder, draw the arm over the knee, raise the knee a little at the same time, and depress the shoulder with the other hand; when the bone will generally slip into the socket.

39. We have now gone through the usual methods for reducing the dislocations in question; but the mode I adopt in all recent cases, and would recommend to you in ordinary cases, I will now relate.

Lay the pationt on his back, either on a bed or sofa, and bring him

near to the edge of it; let a towel be passed over the scapula, in the manner before mentioned, and given to a person to hold fast; then tie a handkerchief above the elbow, having previously passed a wetted roller round the arm, carry the patient's arm from his side, and sit yourself on the edge of the bed; then place your heel in the axilla, and extend the arm, draw steadily for three or four minutes, and the bone is replaced.

If more force should be required than you can make with the handkerchief, you can pass a towel round the arm in its stead, and let two or three persons pull at it, the heel being still kept in the axilla.

40. *Second Dislocation:*—The second dislocation is forwards, beneath the clavicle, upon the second rib, and having the coracoid process on its outer side.

This dislocation may be known from the preceding, by the projection of the acromion appearing greater, from the depression of the deltoid being more considerable, by there being less pain, and by there being a prominence beneath the middle of the clavicle. On rotating the arm, the head of the bone may be felt to roll, the elbow is thrown from the side, and at the same time backwards; and the motions of the arm are more confined than in the first dislocation.

41. The reduction of this dislocation is to be accomplished by the same means as in the former dislocation. The same bandage should be used, and the arm bent; but the direction in which the bone is drawn, is the principal circumstance to be attended to.

The extension must first be made obliquely *downwards* and *backwards*, until the head of the bone has passed the coracoid process, then it may be raised in an *horizontal* direction, and, by the pressure of the heel in the axilla, the bone will be easily returned.

42. In the dislocation forwards, an injury of great violence may occasion the head of the bone to be forced through the integuments.

In such cases, the reduction should be immediately effected in the usual manner. A suture should be introduced, and lint, dipped in blood, applied to the wound, and adhesive plaster, to retain the apposition of the wound; the limb should be kept close to the side by a roller, including the arm, and the least motion prevented. By this treatment, the suppurative inflammation will not occur, and the patient's life not be endangered.

43. *Third Dislocation:*—The third dislocation is backwards, on the dorsum scapulæ, just beneath the spine, and may be readily known by the projection of the

head of the bone, and by its following the movements of the elbow when rotated.

The reduction of this dislocation is to be effected by the same measures as used for the first; the bandages are to be applied in the same manner, and the extension made in the same direction, rotating at the same time, the head of the bone *inwards*.

44. *Fourth Dislocation*:—The fourth dislocation of the humerus is only partial, and is a very frequent accident.

In this dislocation, the head of the bone is thrown forwards against the coracoid process; there is a hollow at the back part of the shoulder joint; the axis of the arm is thrown inwards and forwards; the under motions of the arm are still performed, but it cannot be raised, from its striking against the coracoid process. The head of the bone may be felt to rotate.

45. The reduction of this dislocation is the same as that for the dislocation forwards; but the shoulders should also be drawn backwards, to bring the head of the bone to the glenoid cavity.

After the reduction, the shoulders must be secured by the clavicular bandage, or the bone will again slip forwards, against the coracoid process.

46. There are three accidents about the shoulder joint with which dislocations are liable to be confounded; viz. fracture of the acromion, fracture through the neck of the scapula, and fracture through the neck of the humerus.

47. *First Accident*:—In fracture of the acromion, the roundness of the shoulder is in some measure lost, and the head of the bone drops towards the axilla; and it may be readily distinguished by the shoulder regaining its proper shape on supporting the arm, and by its again sinking when that support is removed.

If you trace the spine of the scapula forwards to the clavicle, on reaching that part, the finger sinks into a depression; then raise the arm, and place one hand firmly on the acromion, and rotate the elbow with the other, and you will distinctly perceive a crepitus. In the treatment of this accident, you are to make the head of the os humeri act as a splint, to support the detached portion of bone: with this view, then, you support the elbow in a short sling, and bend the fore-arm across the chest; put a thick pad between the elbow and

the side, so as to separate it widely from it, in order to relax the deltoid. Let the motion of the arm be perfectly prevented, by bending it firmly to the chest by a roller, and let the elbow be carried a little backwards. The arm should be kept firmly fixed for three weeks; it will unite by bone, if motion be prevented; but, as this is very difficult to accomplish, the union is generally ligamentous.

48. *Second Accident*:—Fracture through the neck of the scapula is more likely to be mistaken for dislocation than any other; but by carrying the hand over the shoulder, and resting the finger on the caracoid process, and then rotating the arm, a crepitus will be felt. Again, place your arm under the arm of the patient, and, by raising it a little, you will restore the natural appearance of the joint; but when you take away your support, the shoulder will again sink.

The treatment of this fracture is, to place a thick pad in the axilla, to carry the humerus, and with it the glenoid cavity *outwards*; to support the humerus in a short sling, to preserve the parts in apposition.

The clavicular bandage will assist in keeping the head of the bone outwards, and the motion of the arm may be prevented, by confining it to the chest by a roller.

It requires from ten to twelve weeks for its recovery, and continues weak for three weeks after.

49. *Third Accident*:—Fracture through the neck of the humerus, may be distinguished from dislocation in the same manner as the accident just mentioned, and by passing the hand over the shoulder-joint, and fixing the head of the humerus with the fingers, whilst at the same time having raised the elbow, and carried the upper part of the humerus a little outwards, you will feel a crepitus on rotating the elbow, but the head of the bone does not follow the rotation of the arm.

In this accident, you are to apply a roller, from the elbow to the shoulder-joint, and put a splint on the inner and outer side of the arm, to be confined by another roller; a thick pad is to be placed in the axilla, and the arm gently supported in a sling. The principal difficulty is to prevent the pectoral muscle drawing the body of the bone forwards; but, if the inner splint be properly applied, its influence will be counteracted.

It requires from three to six weeks to unite, according to the age of the patient.

DISLOCATIONS OF THE ELBOW.

50. The elbow may be dislocated in five directions; viz. both bones backwards, laterally, ulna backwards, the radius forwards, and the radius backwards.

51. *First Dislocation:*—The dislocation of both bones backwards, is strongly marked by the alteration in the form of the joint, and by its great loss of motion.

There is considerable projection formed posteriorly by the ulna and radius. On each side of the olecranon, there is a hollow; a large hollow swelling is felt at the fore part of the joint, immediately behind the tendon of the biceps which is the extremity of the humerus. The hand and fore-arm are in a state of supination, and you cannot turn them prone.

52. The accident usually occurs in this way: a person when falling, puts out his hand to save himself; but, the arm not being perfectly extended, the whole weight of the body is thrown upon the radius and ulna, and they are forced behind the axis of the humerus.

In reducing this dislocation, let the patient be seated on a chair, take hold of his wrist, and put your knee on the inner side of the elbow joint, then bend the fore-arm, and at the same time press upon the radius and ulna with the knee, so as to separate them from the humerus, and so as to throw the coranoid process of the ulna from the posterior fossa of the humerus, where it is lodged. Whilst this pressure is kept up by the knee, the arm is to be forcibly, at the same time gradually, bent, and the bones will slip into their places.

After the reduction, the arm should be kept fixed, and a bandage applied, which should be kept wet with an evaporating lotion, and the arm supported in a sling. The fore-arm should be bent, at rather less than a right angle with the upper arm.

53. *Second Dislocation:*—The elbow is sometimes dislocated, laterally, when the ulna will be thrown either on the external or internal condyle.

When thrown outwards, the projection is greater than in the dislocation backwards; as the coranoid process, instead of being lodged in the posterior fossa, is thrown behind the external condyle, and the radius forms a protuberance behind, and on the outer side of the humerus, so as to produce a hollow above it; on rotating the hand, the radius may be felt to move.

When the ulna is thrown upon the internal condyle, it projects posteriorly, as in the dislocation outwards, and the head of the radius is situated in the posterior fossa of the humerus. It may be known by the great projection of the external condyle of the humerus, and by the hollow above the olecranon on the inner and back part of the arm.

54. This dislocation may be reduced in the same manner as the first dislocation.

You bend the arm over the knee, without turning it directly outwards or inwards; for, as soon as the radius and ulna are separated from the humerus by the pressure of the knee, the biceps and the brachialis internus, which have before been kept powerfully upon the stretch, give the bones the proper direction for reduction.

55. *Third Dislocation:*—The third dislocation is backwards. The ulna is sometimes thrown backwards upon the humerus, whilst the radius remains in its proper situation.

The deformity of the limb is very great, by the fore-arm and hand being twisted inwards, whilst the olecranon projects considerably. The fore-arm cannot be extended, nor can it be bent to more than a right angle. It is rather more difficult to detect than the other dislocations of the elbow, but it may be known by the projection of the ulna, and the twisting in of the fore-arm.

56. This dislocation is more easily reduced than when both bones are dislocated.

You may do it readily, by bending the arm over the kneo, and drawing the fore-arm downwards. In addition to the action of the brachialis internus, the radius, by resting on the external condyle, will act as a lever to the fore-arm, in pushing the os humeri backwards on the ulna, when the arm is bent.

57. *Fourth Dislocation:*—The radius is sometimes separated from its connection with the coranoid process of the ulna, and is thrown forwards into the hollow above the external condyle of the os humeri, and upon the coranoid process of the ulna.

In this dislocation, the fore-arm is slightly bent, but cannot be brought to a right angle with the upper, nor can it be perfectly extended; when bent suddenly, the flexion is checked by the head of the radius striking against the fore part of the os humeri. The hand is between pronation and supination, but neither can be done perfectly; and it is nearer pronation. By carrying the thumb into the fore part of the elbow-joint, and rotating the hand at the same time, the head of the radius will be felt to rotate also; and this, with the sudden check to the bending of the fore-arm, are the best marks of the injury.

58. This accident happens from a fall upon the hand, when the arm is extended, and the radius receives the weight of the body.

In your attempt of reduction, the hand should be turned supine, the fore-arm should be bent, and extension made from the hand, without including the ulna.

59. *Fifth Dislocation:*—Of the dislocation of the radius backwards, I have never seen a case in the living body; but a subject was brought into our dissecting room with this accident.

I have no doubt but that it might be easily reduced by bending the fore-arm, but a bandage should afterwards be worn.

DISLOCATIONS OF THE WRIST.

60. Dislocations of the wrist joint are of three kinds, viz. both bones; the radius forwards; and the ulna backwards.

61. *First Dislocation:*—Dislocation of both bones is not of very frequent occurrence; but the bones may be either thrown backwards or forwards, according to the direction of the force applied.

If a person in falling receives his weight upon the palm, the carpal bones are thrown backwards, and the radius and ulna forwards. When this is the case, a swelling is produced by the radius and ulna on the fore part of the wrist, and a similar swelling is produced on the back part, with a depression above it. The hand is forcibly bent back.

If a person fall on the back part of the hand, the carpus is forced under the flexor tendons, and the radius and ulna are thrown upon the back part of the hand. These two projections become the diagnostic marks of the accident, and will distinguish it from a swelling, on the fore part of the hand, about the flexor tendons, in consequence of a violent sprain; as in this case there is only one swelling and it does not appear immediately after the accident, but gradually increases in size.

62. The reduction of the first dislocation of the wrist joint, in either form, is not difficult.

Grasp the patient's hand with your right, and support the fore-arm with your left hand; whilst an assistant places his hands firmly round the arm, just above the elbow. Then let both extend, and the bones are soon replaced. The muscles will direct the bones into the proper situation, as soon as the extension is sufficiently made. A roller should be applied round the wrist, wetted with an evaporating lotion, and a splint be placed before and behind to the fore-arm, reaching to the extremities of the metacarpal bones.

63. *Second Dislocation:*—The radius only is sometimes thrown forwards upon the carpus; in this case, the outer side of the hand is thrown backwards, and the inner forwards. The extremity of the bone forms a protuberance on the fore part of the wrist.

The extension necessary to reduce this dislocation, and the after treatment, are the same as when both bones are displaced.

64. *Third Dislocation:*—The ulna is sometimes separated from the radius by the rupture of the ~~setriform~~ sacc ligament, and it usually projects backwards.

This dislocation may be known by the projection above the level of the os cuneiform, and by its being easily returned by pressure to its former situation, and by its rising again when the pressure is removed.

After you have put the head of the bone into its place, put a compress of leather on its extremities, to keep it in a line with the radius. Splints should be placed along the fore-arm, and a roller applied over the splints, to confine them with firmness.

DISLOCATIONS OF THE CARPAL BONES, ETC.

65. *Carpal Bones:*—A dislocation of a carpal bone is of very rare occurrence, and generally happens from a person, when falling, receiving the weight of the body on the part; and it is also sometimes attended with a fracture.

In these cases, straps of adhesive plaster should be braced rather tightly about the wrist, to support and strengthen it; and over these you should pass a bandage, which would afford it additional support. Pumping cold water, from a considerable height, is also very useful, and rubbing the parts afterwards with a coarse towel, gives vigour to the circulation, and increases the strength of the joint. Sometimes ganglia are mistaken for dislocations of the carpal bones, but these are easily removed by striking them smartly with the flat surface of a book, and the supposed dislocation immediately disappears.

66. A compound dislocation of the carpal bones frequently occurs; it arises, generally, from the bursting of guns, or the hand being cut in machinery.

In these cases, one or two of the carpal bones may be dissected away, and the patient recovers without losing his hand, and also preserves a considerable degree of motion in the part. If, however, greater injury be done, amputation is generally required.

67. *Metacarpal Bones:*—I have seldom seen the metacarpal bones dislocated, except as the result of excessive violence. They are so firmly connected with the bones of the carpus, that great force is necessary to separate them, and so much injury is done to the parts that amputation is generally necessary.

These cases usually happen from the bursting of guns, or the passage of heavy bodies over the hand. If it should happen that the metacarpal bones of the middle and ring fingers require to be removed, you may bring the fore and little fingers so nicely together, as to produce little deformity; that is, if you can succeed in procuring union by adhesion.

68. *Fingers and Toes:*—Dislocations of the fingers and toes are accidents of rare occurrence; for in addition to their capsular and lateral ligaments, their articulations are powerfully strengthened by the extensor and flexor tendons.

69. When the dislocations of the fingers take place, they are more frequently found between the first and second phalanges, than between the second and third.

A dislocation in this place can be readily ascertained by the projection of the first phalanx backwards, while the head of the second can be felt on the fore part less distinctly.

70. If the finger has not been dislocated many hours, you can easily reduce it; but if it has been neglected at first, the reduction can only be accomplished by long-continued and steady extension.

I would not advise you to divide the ligament of the joint in order

to facilitate its reduction; but recollect that you are to give the joint a slight inclination forwards to relax the flexor muscles.

The dislocations of the toes are rather more difficult to reduce than the fingers, as the phalanges are much shorter, and the parts less easily moved, from their being less stiff.

71. A toe or finger is sometimes thrown out of its natural situation by the flexor tendon and theca, or even the palmar fascia, becoming contracted.

When the thecæ are contracted, nothing should be attempted, as no operation will succeed; but when a thickened band of fascia appears to be the cause of the contraction, it may easily be divided by a pointed bistoury introduced through a very small wound in the integument. The finger should be then extended, and kept in this position by a splint.

DISLOCATIONS OF THE THUMB.

72. The dislocations of the thumb are four in number, and on account of the numerous strong muscles inserted about it, they are very difficult to reduce.

73. *Metacarpal Bone:*—The metacarpal bone is sometimes dislocated from the trapezium; and it will generally be found that it is thrown inwards between the trapezium, and the root of the metacarpal bone of the fore finger.

Considerable pain and swelling are produced by this accident, but it may be detected by the protuberance forward towards the palm of the hand, by the thumb being bent backwards, and not allowing of its being brought towards the little finger.

74. With respect to the reduction of this dislocation of the thumb, if the bone cannot be reduced by simple extension, it is better to leave the case to the degree of recovery which nature will in time produce, than to run any risk of injuring the nerves and blood-vessels by dividing the muscles or ligaments.

What I have before said respecting the relaxation of muscles inserted into a dislocated part, is particularly necessary to be attended to here. You know that the flexor muscles are more strong than the extensors, and you will, therefore, very much facilitate the reduction by giving the thumb a little inclination towards the palm of the hand; in this manner the flexors may be relaxed, and their resistance diminished. The extension must be steadily continued for a considerable time, as no sudden violence will effect the reduction.

75. A compound dislocation of the metacarpal bone of the thumb is sometimes produced by the bursting of guns; but in these cases, you can easily return it to its natural situation; and, if the flexor tendon should have escaped unhurt, the person may recover useful motion of the part.

You should bring the integuments together as nicely as you can, confine them by a suture if necessary, and over this, put a piece of lint dipped in blood, which is the best application; if necessary, you must apply a poultice, but when the bruise has not been considerable, it will heal by the adhesive process.

76. *First Phalanx*:—In the simple dislocation of the first phalanx of the thumb, you will find it thrown back upon the metacarpal bone, where it forms a projection; and the lower part of the metacarpal bone projects inwards, towards the palm of the hand.

In this case, the thumb may be brought towards the fingers, but the flexion and extension which are performed between the metacarpal bone and the first phalanx, are prevented by the dislocation.

77. In the reduction of this bone, as in the last case, the direction in which the extension is to be made, must be attended to. The thumb should be bent towards the palm, in order to relax the flexor muscles, and the mode of applying the extending form is that which I would recommend to be generally adopted in dislocations of the toes, thumb, and fingers.

In order to relax the parts as much as possible, the hand should be soaked for a considerable time in warm water, a piece of wetted wash leather is to be as closely wrapt round the first phalanx as possible; a tape, about two yards in length, should be fastened on the leather with a knot which will not slip, such as the sailors call the clove-hitch. An assistant should now firmly press on the metacarpal bone, by putting his middle and first fingers between the fore finger and thumb of the patient, and thus make counter-extension, whilst the surgeon, assisted by others, draws the first phalanx from the metacarpal bone, inclining it at the same time, a little towards the palm of the hand.

78. If the efforts made in the way just described, after having been continued ten or fifteen minutes, do not succeed, then it will be necessary to adopt another plan.

In addition to the apparatus already employed, let a strong worsted tape be carried between the metacarpal bone and fore finger, bend the fore-arm round a bed post, and let the tape be firmly tied over it, so as to prevent the hand yielding when extension is made. To the tape surrounding the first phalanx, a pulley is to be applied, and extension made, which will generally succeed.

79. With the greatest care and attention, and with the most persevering efforts, you will sometimes fail in reducing this dislocation, where it has been neglected, and much time allowed to intervene between the occurrence of the accident, and your attempts at reduction.

Although this should be the case, no division of the parts should be made, as the patient will have, after a time, a very useful thumb.

80. In compound dislocations of the first phalanx, if the wound is large, and much difficulty is experienced in the reduction, I should recommend the removal of the part.

I would advise you rather to saw off the extremity of tho bone, than injure the parts further by the pressure which would be necessary. Lint dipped in blood should be applied to the wound, a roller lightly passed round, and evaporating lotions should be used for several days, until the wound is healed. If passive motion be begun early, a very useful joint will be formed.

81. *Second Phalanx:*—A simple dislocation of the second phalanx is more easily reduced than a displaced first phalanx.

It is best reduced by grasping firmly the back of the first phalanx with your fingers, and placing the thumb on the fore part of the dislocated phalanx, then bending it on the first as much as you can. In this way you may lift the second over the lower part of the first phalanx, by making your thumb the fulcrum.

82. When there is a compound dislocation of this joint, your treatment must be similar to that for a compound dislocation of the first phalanx.

In addition to the sawing off the ends of the bone, you should pare the ends of the tendon smoothly with the knife, and if you then bring them together, they will unite. Passive motion should be begun at the end of a fortnight or three weeks.

DISLOCATIONS OF THE LOWER JAW.

83. The lower jaw is subject to two species of dislocation, the complete and partial.

84. *Complete Dislocation:*—When the jaw is completely dislocated, both its condyles are advanced into the space between the surface of the temporal bone, and zygomatic arch.

The jaw is known to be completely dislocated, by the mouth being opened, and the patient not being able to shut it by any pressure which you may make on the chin. The lower teeth will be found in a line anterior to the upper. You may depress the jaw a little, but to a very inconsiderable extent. The appearance is just that of a person when yawning. The pain, although severe, is not attended with danger. The saliva is very much increased in quantity, in consequence of irritation of the parolid glands, and it dribbles over the mouth.

85. A blow upon the chin when the mouth is widely opened, will cause this accident. Yawning very deeply will also, sometimes, produce the same effect.

86. *Partial Dislocation:*—When the lower jaw is partially dislocated, one condyloid process only advances, while the other remains in the articular cavity of the temporal bone.

In this case, the mouth is not so widely opened as in the complete dislocation, but the patient cannot close it, from the condyloid process on one side being advanced under the zygoma; and presents a very ludicrous appearance of the face, from the twist which is given it.

This accident is easily distinguished, by the chin being thrown to the opposite side of the dislocation, the incisor teeth are advanced upon the upper jaw, but are no longer in a line with the axis of the face.

87. *Reduction:*—The reduction of these dislocations must depend on circumstances.

They are generally reduced, by wrapping a handkerchief around the thumbs; placing them on the coronoid processes, and depressing the jaw, you force it backwards as well as downwards, and the bone suddenly slips into its place.

88. In recent cases this mode will succeed very well, but it is not the plan I would recommend as a general resource.

I should advise you to place some body that will not injure the gums, behind the molar teeth, on each side of the mouth, and for this purpose, I know no better material than two corks, and then raise the chin over them. This practice is very effectual in reducing dislocation, and is less likely to injure the bone or soft parts.

I have also used two forks for the same purpose; having wrapped a towel or handkerchief round their points, I carried their handles into the mouth on each side behind the molar teeth; they were then held by an assistant, and, drawing the chin towards the upper jaw, the bone was easily and quickly reduced.

89. *Imperfect Dislocation :*—An imperfect dislocation of the jaw sometimes happens from a relaxation of the ligaments, something in the same way as that in which the thigh bone is thrown from the semilunar cartilages.

The jaw appears to quit the interarticular cartilage of the temporal bone, slips before its edge, and fixes the jaw, the mouth being at the same time slightly opened.

90. In these cases, the natural efforts generally restore the situation of the parts, but I have seen it continue a length of time; yet the motion of the jaw, and the power of closing the mouth have returned.

You must, in your attempt to return the jaw, press directly downwards; by which you separate the jaw from the temporal bone, and allow the cartilage to replace itself on the extremity of the condyloid process. A snapping is sometimes heard when the bone is returned to its socket.

91. Young women of a relaxed muscular fibre are generally the subject of this complaint; and when it has once occurred, the bone is easily displaced again from a slight cause, and therefore the motions of it should be limited.

In your treatment, you should endeavour to give a general tone to the constitution, by the exhibition of ammonia and steel, with the warm bath; a blister before the ear will also contribute to remove the disposition to a reappearance of the accident.

You will best confine the jaw by making a hole in the middle of a broad tape, to receive the chin, and split the ends into two parts, bring one over the top of the head, and the other over the occiput, and the tendency to subsequent luxation will be prevented.

DISLOCATIONS OF THE HIP-JOINT.

92. As far as I have seen, there are but four dislocations of the thigh bone; viz. upwards, or upon the dorsum of the ilium; downwards, or into the foramen ovale; backwards and upwards, or into the ischiatic notch; and lastly, forwards and upwards, or on the body of the pubis.

Another dislocation has been described by some surgeons, namely, downwards and backwards, but I have never met with a case, and should rather doubt the accuracy of description.

93. *First Dislocation:*—Of the dislocation *upwards*, or on the *dorsum of the ilium;* this happens more frequently than any other dislocation of the hip-joint.

When called to this accident, you must expect to find great extravasation, which will conceal, in some degree, the situation of the parts; but by a rotation of the knee inwards, the head of the thigh bone may be felt, and the trochanter major approaches the anterior superior spinous process of the ilium.

94. The characteristics of this dislocation are, a difference in the length of the limb, a change of position inwards, a diminution of motion, and a flattening of that side by the altered situation of the trochanter major.

You will find the toes rest against the tarsus of the opposite foot; the knee and foot are turned *inwards*, and the knee is a little advanced upon the other; the limb is about one inch and a half, or two inches and a half *shorter* than the other, and this may easily be detected, by comparing the malleoli interni when the foot is at right angles with the leg. If you try to separate the leg from the other, you find you cannot do it, as the abduction of the limb is completely prevented, but you may bend the thigh a little across the other.

95. This accident may be distinguished from fracture of the neck of the thigh bone, within the capsular ligament, with which it is most likely to be confounded, by symptoms which are sufficiently distinct to a person who is commonly attentive.

In the fracture of the neck, the knee and foot are turned *outwards*, the trochanter is drawn upwards and backwards, resting on the dorsum ilii; but the most striking symptom is this, although the limb may be

The relative proportions of cases will be in 20 as follows.
12 on the Dorsum Ilii
5 in the Ischiatic Notch.
2 in the Foramen ovale
1 on the Pubes — P 88. & 89.

Fractures of the Os Innominatum are liable to be mistaken for dislocations. When a fracture occurs thro' the acetabulum the head of the bone is drawn upwards, & the trochanter forwards so that the leg is shortened. the knee & foot turned inwards. Such a case may be readily mistaken for dislocation into the Ischiatic notch. If the Os Innominatum be disjointed from the Sacrum and the pubes & Ischium broken, the limb is a slight degree shorter than the other but in this case the knee & foot are turned outwards.

These accidents are generally detected by crepitus on the motion of the thigh if the hand be placed on the Crista Ilii and they are attended with more motion than in dislocations. pp. 94 & 95.

Fractures of the neck of the thighbone rarely occur except in advanced age & is the effect of the most trifling accidents. 34 -

If the bandages set loose before the reduction is effected, they sh^{d} be renewed as expeditiously as possible, to prevent the muscles having time to recover their tone. - p 37.

shortened one or two inches, according to the duration of the accident, yet by extension, you may restore the natural length of the limb, but the limb is again shortened immediately on your removing the extending force. If, when you have drawn down the bone, you rotate it, you can distinctly feel a crepitus, but this ceases to be felt when the limb is allowed to be again shortened.

96. The dislocation on the dorsum of the ilium, is produced by the patient falling when the knee and foot are turned inwards, or by a blow being received while the limb is in that position.

The following plan is to be adopted in attempting to reduce this dislocation. Bleed the patient to twelve or twenty ounces, or more if he is a very strong man. Next place him in a warm bath, at 100°, gradually increase it to 110°, until he begins to faint. Whilst he is in the bath, give him one grain of tartarized antimony, until he feels nausea; then wrap him in a blanket, and place him on a table, between two strong posts, into which two staples have been fixed; or, if you cannot find a convenient place for this, place him on the floor, and screw two rings, about the distance I have mentioned, into the floor.

97. Such is the plan which is usually adopted, but the course which I take is somewhat different.

I place the patient on a table with a blanket on his back; then a strong girt is passed between his pudendum and thigh, and this is fixed to one of the staples. A wetted linen roller should be applied just above the knee, and on this a leather strap is to be buckled, having two straps with rings at right angles with the circular part. The knee should be slightly bent, not quite at a right angle, and brought across the opposite thigh, a little above the knee. The pullies are to be hooked to the rings on the circular strap, and fixed to the other staple. You should now tighten the pullies, till you see the bandage is on the stretch, and the patient begins to complain of pain; then wait a little, with the degree of extension you have now made, to give the muscles time to fatigue; then draw again gently, and, when the patient complains much, stop again, until the muscles yield; and so go on, until you find the head of the bone is brought just opposite the acetabulum. Let the same extension be kept up by another person taking the string of the pullies, and then rotate the limb gently, and the bone will generally slip into its place.

You must not expect to hear a snap when the bone is returned, as by using the pullies, the muscles are so much relaxed, that they cannot act with sufficient violence; and you can, therefore, only tell if it is reduced, by loosening the bandages, and comparing the length of the limb.

If there should be any difficulty in bringing the head of the bone over the edge of the acetabulum, you must pass your hand, or napkin under it, and lift it over the edge of the socket.

When the reduction of this dislocation is effected, you should take care in removing the patient to his bed, as, from the relaxed state of the muscles, the dislocation would again happen, and that from a cause so trifling that you would not suspect it to have occurred.

98. *Second Dislocation:*—In the dislocation *downwards*, or, into the *foramen ovale*, you must not trust so much to the foot, as a diagnostic mark; the increased length of the limb, the separated knees, the bent position of the body, are such appearances as sufficiently point out the nature of the injury.

The dislocated limb, in this case, is two inches *longer* than the other. By making pressure with the hand on the upper and inner part of the thigh, you can, in thin persons, distiactly feel the head of the thigh bone. There is a flattening of the hip on that side; the body is bent forwards, owing to the psoas magnus and iliacus internus being put upon the stretch. If you desire the patient to stand upright, you find that the knee is considerably advanced towards the trunk. It is widely separated from the other knee, and it cannot be brought to touch it without much difficulty and pain. The foot is generally turned *outwards* or *inwards*, but the toes point to the ground. ^

It generally happens when the thighs are widely separated from each other, that the ligamentum teres and capsular ligament are torn through, and the head of the bone is situated on the obturator externus muscle, at the inner and back part of the thigh.

99. In this dislocation, if the accident is recent, it is very easily reduced.

Place the patient on his back, separate the thighs as widely as possible, and place a girt between the pudendum and upper part of the thigh; fix the girt to the staple in the wall, then take hold of the ancle of the dislocated side, and draw it over the other leg, or, if the thigh be very large, behind the sound limb, and the head of the bone usually slips into the socket. Or the thigh might be secured by a bed-post being received between the pudendum and the upper part of the limb, and the leg be carried inwards, across the other. But the best plan, in general, is to fix the pelvis, by a girt passed round it, and crossed under that which passes round the thigh, to which the pullies are to be attached, otherwise the pelvis moves in the same direction as the thigh.

100. If the dislocation has existed for three or four weeks, a different plan of reduction must be adopted.

In these cases, it is better to place the patient on his sound side, and fix the pelvis by one bandage, and carry another under the dislocated thigh, to which the pullies are to be affixed perpendicularly; then draw the thigh upwards, and, at the same time, press down the knee and foot, to prevent the lower part of the

The bent position of the body, the separated knees and increased length of the limb are the diagnostic symptoms.

limb being carried with the thigh, and you thus use the limb as a lever of considerable power. But take care not to advance the leg too much, as the head of the bone would be forced behind the acetabulum into the ischiatic notch, from which it would be extremely difficult to remove it.

101. *Third Dislocation:*—The dislocation *backwards*, or into the *ischiatic notch*, is the most difficult of all the dislocations of the thigh to detect, because the length of the limb differs but little, and its position is not so much changed as respects the knee and foot, as in the dislocation upwards.

In this dislocation, the head of the bone is placed on the pyriformis muscle, between the edge of the upper part of the notch and the sacro-sciatic ligaments. The limb is from half an inch to an inch *shorter* than the other, but usually not more than half an inch, and the toe rests against the ball of the great toe of the opposite foot. The natural prominence formed by the trochanter major, is lost, but it still remains nearly at right angles with the dorsum, but it has a slight inclination towards the acetabulum. Except in very thin persons, you cannot feel the head of the bone, and then only by rolling it a little forwards. The knee and foot are turned *inwards*, but less so than in the dislocation upwards; the knee is only very slightly bent, and therefore is not so much advanced as in that dislocation. The toe touches the ground when the patient is standing, but not so the heel. Flexion and rotation are in a great degree prevented from the limb being so firmly fixed.

102. This dislocation is produced by the knee being pressed inwards* whilst bent at right angles with the abdomen, or whilst the trunk is bent forwards on the thigh.

103. The reduction of this dislocation is very difficult, because the head of the bone is placed deep behind the acetabulum, and requires to be lifted over its edge, as well as to be drawn towards it.

Let the patient be laid on a table, on his side, and a girt passed between the pudendum and inner part of the thigh, to fix the pelvis; then pass a wetted roller round the knee, and buckle the leather strap over it; let a napkin be passed under the upper part of the thigh; next, bring the thigh over the middle of the opposite one, and then begin to make your extension with pullies. Whilst the extension is making, an assistant should grasp firmly the napkin at the upper part of the thigh with one hand; and, resting the other hand on the pelvis, he should lift the thigh as much as possible towards the acetabulum, so as to get the head of the bone over its edge. I have also directed a round towel to be used for this purpose; this passed beneath the upper part of the thigh, and then carried over the shoulders of an assistant, who then rests both hands on the pelvis, and, by raising his body gently, raises the thigh with it.

This dislocation has been reduced, by making extension with the pullies in a right line with the body; and, at the same time this extension was made, the trochanter major was thrust forwards with the hand. The former method is the most easy, and is that which I generally adopt.

104. *Fourth Dislocation:*—The dislocation *on the pubes* is much more readily detected than any other dislocation of the thigh.

In this dislocation, the limb is an inch *shorter* than the other, and the knee and foot are turned *outwards*, and cannot be rotated inwards; but the most striking mark is, that the head of the thigh bone may be felt upon the pubes, above the level of Poupart's Ligament, to the outer side of the femoral artery, and feels like a hard ball there, which will readily move on rotating or bending the thigh.

105. The dislocation in question generally happens in this way:—if a person, while walking, puts his foot into some unexpected hollow, he throws his body suddenly backwards, to preserve his equilibrium, and the head of the bone starts forwards on the pubes.

To reduce this dislocation, you place the patient on a table on his side; then carry a girt between the pudendum and the inner part of the thigh, and fix it in a staple, a little before the line of the body. The roller is to be passed around the thigh, and the pullies fixed as in the dislocation upwards, and the extension is to be made in a line behind the axis of the body, the thigh bone being drawn backwards. After this extension has been continued some time, pass a napkin under the upper part of the thigh, whilst an assistant, resting one hand on the pelvis, lifts the head of the bone over the pubes and edge of the acetabulum.

DISLOCATIONS OF THE PATELLA.

106. The patella may be dislocated in three directions, viz. outwards, inwards, and upwards.

107. *First and Second Dislocations:*—The patella is most frequently thrown on the *external* condyle, and produces there a great projection, and the patient is unable to walk.

108. It generally happens in those persons who have a little inclination of the knee inwards.

It is most frequently produced by a person falling with his knee turned inwards, and his foot at the same time turned outwards, and the action of the muscles in the attempt made to prevent the fall, draws the patella over the external condyle of the femur.

109. The dislocation on the *inner* condyle is less frequent, and happens from a blow on the outer side of the patella, received in a fall on some projecting body.

In the reduction of either of these dislocations, you are to place the patient in a recumbent posture, and let the leg be raised by lifting it at the heel, by which you relax the extensor muscles of the thigh in the greatest possible degree; you then press on that edge of the bone which is furthest from the articulation, and this raises the inner edge of the bone over the condyle of the femur, and it is directly drawn into its proper position by the action of the muscles. Evaporating lotions of spirit and water are to be employed, and afterwards, say in two or three days, bandages should be applied.

110. *Third Dislocation:*—In the dislocation of the patella *upwards*, the ligamentum patellæ is torn through, and the patella is drawn on the upper and fore part of the thigh bone.

The marks of this accident are at once decisive; for besides the easy motion of the patella from side to side, a depression is felt above the tubercle of the tibia, from the laceration of the ligament. The patient loses the power of bearing on the limb, and a considerable degree of inflammation succeeds.

111. The object of your treatment in this case, is to keep the bone in contact with the ruptured ligament, and to subdue or prevent inflammation by appropriate remedies.

First apply leeches, and afterwards evaporating lotions, from four to seven days; then apply a roller round the foot and leg, and keep them completely extended by a splint behind the knee; then buckle a leather strap above the knee, and to this, let another strap be fastened, which is to be passed under the foot, and buckled to the opposite side of the circular strap. The bone is in this way drawn down to the ruptured ligament, and an union consequently takes place. The patient at the same time should continue in the sitting posture, so as to relax the extensors of the leg which are inserted into the patella.

DISLOCATIONS OF THE TIBIA, AT THE KNEE JOINT.

112. The dislocations of the tibia at the knee joint, are four, two complete, and two incomplete; or, inwards, outwards, forwards, and backwards.

113. *First Dislocation:*—In the dislocation *inwards*, the tibia projects on the inner side of the joint, and the condyle of the femur rests on the external semilunar cartilage.

114. *Second Dislocation:*—The tibia is sometimes thrown on the *outer* side of the joint, the condyle of the femur being placed on the inner semilunar cartilage, and the deformity produced is just as much as in the first dislocation.

115. *Third Dislocation:*—The tibia is sometimes dislocated *forwards;* in which case the tibia is raised, the thigh bone is depressed, and thrown rather to one side, sometimes so much so, as to compress the popliteal artery.

116. *Fourth Dislocation:*—When the tibia is dislocated *backwards*, the limb is shortened, the condyles of the femur project, and there is a depression of the ligaments of the patella, and the leg is bent forwards.

117. *Reduction:*—Each of these dislocations may be reduced by simple extension, for, as soon as you remove the surfaces of the bones from each other, the muscles give them the direction necessary to be restored to their proper situation.

PARTIAL DISLOCATION OF THE FEMUR, FROM THE SEMILUNAR CARTILAGES.

118. The most frequent cause of this accident, is the

person striking his toe against some projecting body when the foot is everted. He immediately feels pain in the knee, and it cannot be completely extended. I have also known it from a sudden twist inwards, when the foot is turned.

The manner in which the accident happens is as follows:—The ligaments uniting the semilunar cartilages to the head of the tibia, become relaxed, the cartilages are easily pushed from their situations by the condyles of the femur, which therefore come into contact with the head of the tibia. When the limb is attempted to be extended, the edges of the semilunar cartilages prevent it.

119. The mode of restoring the parts in this accident, to their natural position, is very clear and easy.

You must bind the limb back as far as possible, by which you remove the pressure made by the thigh bone, and this enables the cartilage to slip into its place, and the condyles of the femur are again received on the semilunar cartilage.

As the accident is very liable to happen again, the return of it is best prevented by a bandage made with a piece of linen having four straps attached to it, and these are bound lightly above and below the patella.

COMPOUND DISLOCATIONS OF THE KNEE JOINT.

120. I have only seen one example of this kind, which required an immediate amputation; and it is probable that in all these cases, unless the wound is very small, so as to allow of its ready closure and adhesion, that a similar practice will be necessary.

DISLOCATIONS OF THE ANCLE JOINT.

121. The dislocations occurring at the ancle joint, are said to be four, inwards, outwards, forwards, and backwards, but I have never seen one backwards.

The ancle joint is well protected by numerous strong ligaments: the union of the fibula particularly, is so firm to the tibia and the tarsal bones, that it generally happens that the bone will rather break, than the ligaments give way.

122. *First Dislocation:*—The dislocation *inwards*, is the most frequent, and generally happens from a person jumping from a considerable height, or from running violently with the toe turned outwards, the foot being suddenly checked in its motion whilst the body is carried forwards on the foot, and the ligaments on the inner side of the ancle give way.

The foot is thrown *outwards*, and its inner edge rests upon the ground; the internal malleolus projects so much against the integuments as to threaten their laceration. The foot easily rotates on its axis. There is also a depression above the maleolus externus, attended with great pain; and about three inches above the lower end of the fibula, a crepitus may be felt.

123. The reduction of this dislocation must be followed up by rest and local applications, to prevent inflammatory symptoms.

To reduce the dislocation, place the patient on a mattress on his injured side, and bend the leg at right angles with the thigh, so as to relax the gastrocnemii; let an assistant grasp the foot, and gradually draw it in a line with the leg. You should, at the same time, fix the thigh, and press the tibia downwards, to force it on the articulating surface of the astragalus. After the reduction, let the limb remain on its outer side in the bent position, with the foot well supported, a many-tailed bandage should be applied, and kept wet with the spirit wash.

The patient may leave his bed, and walk on crutches at the end of five weeks; friction and passive motion should be used at the end of eight weeks; and twelve weeks will elapse before he has the perfect motion of the joint.

124. *Second Dislocation:*—The dislocation *outwards* is the most dangerous, as it is produced by greater violence, and is attended with more laceration of the ligament, and more contusion of the integuments.

In this case, the foot is thrown *inwards*, and its outer edge rests upon the ground. The malleolus projects very much, and forms such a decided prominence, that the nature of the injury cannot be mistaken. The toes and foot are pointed downwards.

125. In this dislocation, the malleolus internus is obliquely fractured, and the accident happens from the

wheel of a carriage passing over the leg, or by the foot being twisted in jumping or falling.

To reduce this dislocation, you place the patient on a mattress, on his back, bend the thigh at right angles with the body, and the leg at right angles with the thigh; let the foot be held firmly by one assistant, and the thigh grasped under the ham by another; then extend the foot in a line with the leg, and press the tibia inwards towards the astragalus.

The limb should be laid on its outer side, resting on splints with foot pieces, and a pad should be placed on the fibula, above the outer ancle, extending a little way up the bone, so as to support that part of the leg. The after treatment will be the same as in the former cases. Passive motion should be used in six weeks.

126. *Third Dislocation*:—The dislocation *forwards*, happens from the body falling backward whilst the foot is confined, or from a person jumping from a carriage in rapid motion, with the toe pointed forwards.

In this case, the foot appears much *shortened* and fixed, and the toes are pointed to the ground. The lower end of the tibia forms a hard swelling on the middle of the tarsus. The heel appears lengthened, and there is a projection before the tendo achillis. The tibia rests on the navicular and internal cuneiform bones, the fibula is broken, and caried forwards at the side of the tibia, and it is fractured about three inches above the malleolus.

127. In this dislocation, your treatment of reduction must be followed up by rest.

In reducing this dislocation, you should lay the patient in bed, on his back, an assistant should grasp the thigh at its lower part, and draw it towards the body, whilst another pulls the foot in a line from the leg, and you then push the tibia back, to bring it into its proper place; attending to the same rule for relaxation of the muscles and the after treatment as in the former dislocation. The patient should afterwards rest the leg on the heel, and you should apply splints on each side of the leg, with foot pieces to support the foot at right angles with the leg. In five weeks you may allow the patient to get up, and use passive motion, as the fibula will by that time have united.

128. Sometimes the dislocation forwards, is only *partial*; but the treatment is to be the same as in a complete dislocation.

In a partial dislocation forwards, the tibia rests half on the os naviculare, and half on the astragalus; the fibula is broken, and there is not any considerable projection of the heel. The toe is pointed downwards, and there is great difficulty in putting the foot flat on the ground. The heel is drawn up, and the foot is in a great degree immoveable.

129. *Compound Dislocations*:—Compound dislocations of the ancle joint may take place in the same direction as the simple, and the bones and ligaments suffer in the same way.

Great local inflammation and constitutional disturbance attend these accidents, on account of the wound made into the joint, and the great efforts required to repair it.

130. The principle of treatment to be observed in this dislocation, is to close the wound as completely as possible, to assist nature in the adhesive process by which the wound is to be closed, thus rendering suppuration and granulation less necessary for the union of the opened joint.

The reduction is to be effected in the same manner as I have before described in simple dislocations. Apply a little lint dipped in blood to the wound, put on a many tailed bandage, which is to be kept wet with spirits of wine and water, and the lint should rest on the outer side. But in the dislocation outwards, it is best to keep the foot on the heel, with a splint and foot piece on the outer and inner side of the leg. The knee should be slightly bent, and care taken that the foot does not become pointed.

FRACTURES.

1. Fracture is a term used by surgeons, to express the division of a bone into one or more pieces, from violence.

2. Fractures are either *simple* or *compound*; according as these are accompanied with an external wound, communicating with the ends of the bones, or otherwise.

If the bone is broken in two or more pieces, and there is not an external wound, communicating with the fractured edges of the bone, the fracture is still called *simple*, and on the other hand, if the bone is broken in but one place, and there is an outward wound, the accident is termed a *compound* fracture.

Large wounds may occur at the same time with fractures, but unless these communicate with the bone, they are not called compound fractures.

3. The immediate result of a fracture is the escape of extravasated blood, which in simple fractures becomes absorbed; and the effect which a fracture produces on the constitution, is to set up a violent reaction, so as to bring about a restoration of the injured part.

The degree of this effort of the system will very much depend on the manner in which the accident is treated; for if you are careful in the management of the case, you may procure adhesion of the external wound, and thus reduce the accident to the state of a simple fracture.

4. The mode of union in fractures is ultimately the same, but in simple fractures, ossific matter is deposited in cartilage *without* a suppurative process, and in the other *with* it.

If you do not procure union by adhesion, it is brought about by granulation, and in the following way: The blood which is at first poured out in consequence of the division of the vessels of the medullary membrane, and the periosteum, instead of being confined in the surrounding structures, passes off by the external wound; yet it must be remembered that this effused blood has no share in producing union of the ends of the bone, as it becomes after a few days entirely absorbed. Next, there is a fluid poured out between the periosteum and the bone, which separates the periosteum from the surface of the bone for about an inch, or an inch and a half beyond the place where the bone is fractured. This fluid does not cause a laceration of the vessels of the periosteum, but rather an elongation of them.

Now here is the difference between the simple and compound fracture, for in the former, the fluid, after accumulating for a day or two, becomes in a great measure taken up by the absorbents, and adhesive matter is poured out in its stead; but in the latter, a suppurative process is established, and granulations arise from the broken surfaces. In these granulations, cartilage becomes deposited, and continues to be formed for some time; the discharge of pus gradually diminishes, and in a compound fracture, cartilage continues to be formed until about the twentieth day. It is deposited between the internal surface of the periosteum and the external surface of the bone. At the place where the bones are brought into contact, the periosteum becomes absorbed, and cartilage is deposited between them, in which patches of bony matter are formed, and these, when completed, are covered by an extension of the original periosteum.

5. The cause of non-union in fractures, is the want of approximation.

If the fractured ends are not brought into contact, the periosteum is not raised, the cartilage that forms does not cover the extremities of the bones, and the protruding portions are removed by the absorbents; so that the process of union only goes on in those surfaces of bone which are lying in contact.

6. Compound fractures are much slower in their progress of union than simple fractures; and the union is frequently retarded by exfoliations of bone, which will often take up a tedious time to separate, and keep up considerable constitutional irritation.

Under the granulations arising from the cancellated structure, cartilage is also found, and about the twelfth day in simple, and from the seventeenth to the twentieth day in compound fracture, there are bony patches deposited in the cartilage; and it is by the accumulation of these patches that ossific union gradually takes place.

From three to nine or twelve months is the grade of time required for the complete union of compound fractures.

7. *Treatment:*—In your treatment of fractures under common circumstances, you should reduce the bones as speedily as you can, and if compound, bring the edges of the wound together.

This may be very easily done by relaxing the muscles acting upon the limb. Bring them as nearly into apposition as possible, and if there be slight hemorrhage, do not be searching for a small vessel, but place a little lint over the wound, and by making gentle pressure on it, you may easily suppress the hemorrhage. Next bring the integuments together as neatly as you can, and dip a dossil of lint in the blood, and put it on the surface of the wound. In this way, the wound unites by the adhesive process, and the union of the bone goes on as in simple fracture, and is cured in one-fourth part of the time which would be required if the wound were allowed to be filled by granulations.

8. Such should be the principal object of your treatment under ordinary circumstances, but if the fracture is accompanied with severe contusion of the soft parts, a somewhat different course must be adopted.

You must apply a poultice in these cases, in order to facilitate the discharge from the wound, and promote the separation of the parts

to be removed; for the parts must slough, and therefore it would be useless to attempt to procure an union by adhesion.

9. If in compound fractures, the wound is caused by the ends of the bone or any sharp instrument, you may generally succeed in procuring an adhesion as already directed.

Do not apply adhesive plaster, as it frequently produces erysipelas on the edge of the wound, but use the lint as before recommended; it is the least irritating application I know of, and appears to approach the nearest of any other to the natural covering of the parts.

10. The subsequent steps of your treatment must consist of the application of bandages, evaporating lotions, and splints.

Apply the many-tailed bandage loosely, so that it may give way to the tension that follows, and evaporating lotions over this.

Splints should afterwards be put on; those made of wood are the best, and one should be put on each side of the limb. Do not apply the splints tightly at first, so as to cause pain, but see that they are well padded, and the bones nicely adjusted.

11. It often happens, when a fracture has been thus treated, that in a few days inflammation arises, and a discharge of pus follows.

When this is the case, the lint which was at first applied should be partly removed, and the matter allowed to discharge. If the matter should be small in quantity, after you have let it out, replace the lint carefully, and do not apply a poultice, but continue the use of the cold wash. If, on the other hand, the discharge of matter is considerable, or if it is a contused wound, with a tendency to slough, then you should apply fomentations and poultices, and heal the wound by a granulating process.

12. The *position* of the limb must be the same in compound as in simple fracture; with this exception, that if the suppurative process should be set up, the wound will require dressing, and therefore it will be necessary to have the limb in a convenient position for that purpose.

13. *Constitutional Treatment*:—The constitutional treatment required in compound fractures, will be regulated by the force of the symptoms.

If the patient be young and plethoric, take blood from the arm sufficient to allay the constitutional suffering, but do not give purgatives, as they very much disturb the patient, and add to the irritation, by the necessity which there is of his being frequently removed. Nothing is so bad in the treatment of compound fractures as the frequent changing of the positions and dressings of the patient: it is a state of rest which is necessary for the recovery of the parts, and therefore the less they are disturbed the better. Give opium to quiet the irritation, and give also, at the same time, the saline mixture, with the liquor antimonii tartarizati, to keep up the secretion of the skin.

14. *Difficulties in Treatment:*—And first of the difficulty which now and then exists in the *reduction* of the bone, which occasionally arises from a portion of skin being nipped under the projecting extremity of the bone.

When you try to extend the limb, you find you cannot bring the skin into its place. If this projecting portion of bone is not large, make an incision through the integuments, and turn them to one side sufficiently to reduce the bone, and afterwards try to unite the parts by the adhesive process.

15. When you experience any difficulty in the reduction of a fracture which is very *oblique,* do not divide the integuments; but saw off the sharp projections of bone at the extremities of the fractured portions, and then carefully replace the bone in its proper situation.

The muscles will draw the ends of the bone together, even if it be shortened. Do not adopt this practice, however, where there are two bones, and one is not fractured, for if the broken or the sawn surfaces are not brought into contact, no ossific union can take place.

16. If the bone in fractures should be *very much shattered,* and several pieces be detached and loose, remove them, but with the greatest possible care, so as to avoid irritating the wound more than is absolutely necessary.

If these portions of bone be not removed, they will produce excessive irritation, and will very much retard the healing of the wound by frequent exfoliations. But if the pieces be large, do not detach them, for if they be connected by periosteum, they will again unite; or if there be one large piece, and the periosteum on it is entire, let it remain.

17. Compound fractures are often attended with

hemorrhage from large arteries, which have been wounded by the broken extremities of the bone.

It was formerly the practice to amputate in these accidents, whenever any vessel of importance was wounded, under the supposition that the injury could not be repaired, and that gangrene would in all probability happen. But I have seen so many limbs saved, even when the principal artery going to the limb has been torn, that I am induced by experience to adopt a different plan.

The introduction of extraneous bodies into wounds, to suppress hemorrhage, is wrong in compound fracture, as they produce too much irritation, and do not effectually answer the proposed object. It is better in some cases, in which you have great difficulty to secure the vessel at the wound, not to be twitching and pulling, and continually irritating the wound, and frequently to no purpose, but to cut down at once on the artery, in its course to the part.

18. Another untoward circumstance towards the welfare of compound fractures, is *a high degree of inflammation* attacking the neighbouring part.

If the patient's health is good, the inflammation will not extend beyond a few inches around the accident; but if the patient is irritable, and the injury, for example, be in the leg, the inflammation will extend along the course of the absorbents to the groin, and if there be effusion at the same time accompanying this, it must be considered as an indication of great danger.

19. The symptoms of great inflammatory excitement, generally make their appearance in persons who have lived irregularly, either as regards their diet, or their habits.

Such appearances must not be treated very actively by depletion, apply leeches, fomentations also, and poultices, to the neighbourhood of the wound. Lotions also of the liquor ammoniæ acetatis, with rectified spirits of wine, should be applied to the inflammation on the limb, whilst the poultices are applied to the neighbourhood of the wound. At the same time, opium should be given to allay the constitutional irritability, and a gentle diaphoresis promoted on the skin, by giving some saline medicines.

Be very cautious about the administration of purgatives, as they disturb the patient very much; but if absolutely necessary, give an enema.

10. Another obstacle met with in the treatment of compound fracture, is an excessive *spasmodic action* of the muscles.

This action is sometimes so violent, as to render all your attempts to overcome it absolutely nugatory. Amputation is at once required in a case of this kind.

21. It is sometimes necessary to amputate from *a want of union* between the fractured ends of the bone.

Non-union, I am inclined to think, is generally the result of fracture occurring at the period of parturition. I also believe it is sometimes the result of continuing cold applications for too long a period to the part, thus checking that degree of inflammatory action which is absolutely necessary to bring about a restoration of the parts.

22. If these cases are properly managed, it is not always necessary to amputate; you may give the patient a chance of saving the limb.

The ordinary treatment in these accidents is, to bandage the limb firmly, buckle on a case of firm leather over the limb, and carefully adjust a splint on each side of it, so that no lateral motion may be allowed. If it should happen in the leg, let your patient walk about on crutches, so that by making pressure on the ends of the bone, you may bring on a sufficient degree of inflammation to throw out adhesive, and afterwards ossific matter.

Mr. Aymesbury's splints will be found very useful in the treatment of these cases.

23. It has been recommended to amputate parts which have been injured by compound fracture, when *tetanus* makes its appearance.

I advise you never to amputate in these cases, but to put some of the extract of opium, liquefied by the addition of a little water, into the wound. I have known this succeed when large doses of musk and opium have been taken without producing any effect.

24. To the question, when is the most proper time to operate in compound fractures, supposing the operation to be necessary? I should say, that all the circumstances before mentioned being taken into account, if it will be necessary to amputate in a few days after the accident, then, the sooner it is done the better.

If you amputate at one hour after the accident, the patient will do better than if you leave it twelve hours; for this reason: if you amputate immediately, the constitution has but one shock to sustain, and in general, rallies much better than when the amputation is delayed; but if you leave it eight or twelve hours, there is a great degree of irritation previously set up. The loss of blood is rather a favourable circumstance than otherwise to precede an operation.

25. The persons on whom operations for compound fractures succeed the least, are such as are loaded with adipose matter.

In these persons, if you leave the limb, the constitutional excitement runs so high, that it generally destroys life, and if you amputate, they frequently die in twenty-four hours after the operation, from the constitution being unable to bear the shock which that operation produces.

FRACTURES.

26. In the last chapter we went through the subject of fracture, pointed out the differences of a simple and a compound fracture, and other circumstances connected with these accidents; but more particularly compound fractures. We will now select a few general remarks on the position or other treatment for individual cases. Ed.

FRACTURES OF THE LEG.

27. If the leg is fractured, it should be treated in the manner before directed; then be bent, and laid on the outer side, for if it rest on the heel, then the fractured part is without support, and it requires very great attention to prevent deformity.

If, while the leg is lying on its outer side, you allow the toe to fall, the foot becomes everted, and the patient seldom recovers a useful limb.

FRACTURES OF THE THIGH.

28. If the fracture is in the thigh, it should be placed over a double inclined plane, with a splint on each side; that on the outside, should reach from the trochanter beyond the knee; and both in this and the former fracture, you should keep the ball of the great toe in a line with the inner side of the patella.

I do not like the extended position of the limb, because the muscles are put upon the stretch, and there is danger of a shortening of the limb ensuing. This was the practice about fifty years ago.

A compound fracture of the femur generally does better than a compound fracture of the leg, because the bone is so much surrounded by muscle, that the wound made is much more easily closed, and is not therefore followed by the same degree of suppuration.

29. Of the *fracture which happens at the upper part of the thigh bone*, there are three distinct species, very different in their nature and result.

First, where it happens through the neck of the bone entirely within the capsular ligament. Secondly, through the neck at its junction with the trochanter major, by which the trochanter is split, and the upper piece is driven into it. Thirdly, a fracture through the trochanter major, beyond its junction with the cervix.

30. *First:*—Of the *fracture within the ligament*, and this is an accident which always happens to persons of advanced years; young persons never have it; and it more frequently occurs with women than with men.

Under this accident, the leg is from one to two inches *shorter* than the other; the foot and knee are *everted*. There is little pain when at rest in the recumbent posture. But on rotation, a pain is felt, from the rough end of the bone grating against the synovial membranes lining the capsular ligament. The thigh may be perfectly extended, but flexion is more difficult, and attended with pain, this is increased if the thigh be directed towards the pubes, and lessened if carried outwards. A crepitus is also discoverable when the limb is drawn down, so as to be of the same length as the opposite one, and then rotated, but not so when the patient is lying on his back, with the limb shortened.

31. On the first sight of a patient, then, there are two things that will particularly strike your attention; the shortening of the injured limb, with an *eversion* of the foot and knee.

Now in the dislocation of the femur upwards, the head and neck of the bone prevent the trochanter from being drawn downwards, whilst the neck of the bone being shortened by the fracture, readily admits of it, and this is the reason why the limb is *inverted* in the one, and *everted* in the other. The limb has been found inverted in this fracture, but it is a very rare occurrence.

32. This fracture rarely happens under fifty years of age, and the dislocation seldom at a more advanced period. But the most common period at which the fracture occurs, is between fifty and eighty.

The slightest cause often produces this fracture, from the bones in

The difference in the length of the limbs is best observed by placing the patient on his back and comparing the malleoli.

There is great variety in the degree of shortening. A fork is sometimes formed in the Trochanter Minor, catching the neck of the bone & preventing a greater descent than half an inch —

When the fracture has happened for a length of time the ligament becomes lengthened & the leg is shortened four inches. p. 104.

If doubt exist of the nature of the accident let the patient stand by his bed side, supported by an assistant, and bear his weight upon the sound limb. Observe the shortened state of the injured limb - the toes rest on the ground but the heel does not reach it; the knee & foot are everted - the prominence of the hip diminishes. p 107. & 108.

The balance of the arteries & absorbents is destroyed in old age more from a diminution of arterial than an increase of absorbent action - p. 109.

The more horizontal position of the neck of the thigh bone and comparative feebleness of the female constitution render them more liable to these accidents - p108 old persons having undergone the change peculiar to age; and the way in which they usually happen is from the person slipping off a pavement, and though it is only the descent of a few inches, the unexpected shock acting perpendicularly on the cervix, with the advantage of a lever, produces a fracture. The patient immediately falls, and the accident is frequently improperly attributed to this one circumstance. Even turning suddenly round has produced it.

33. The union of this fracture has been the cause of much difference of opinion. It has been said, that these fractures unite like fractures in any other part of the body, by bone; but it is my firm opinion, that fractures of the neck of the thigh bone, of the patella, olecranon, coronoid process of the ulna, and condyles of the os humeri, unite by *ligament*, and not by bone.

In all the examinations which I have made of transverse fractures of the cervix femoris within the capsule, I have had my opinions confirmed, as I have not met with a single instance in which bony union had taken place. I would not maintain its impossibility, but what I wish to be understood to say is, that if it ever does happen, it is an extremely rare occurrence, and that I have never yet met with a single case.

34. There are many reasons which may be assigned for the want of ossific union in the transverse fracture of the cervix, within the ligament.

35. The first reason, is the want of the proper *apposition* of the fractured ends of the bone.

It is scarcely possible to preserve the parts in apposition, even for a few hours, and the slightest change of position produces an instant contraction of the large and powerful muscles passing from the pelvis to the thigh; so that the ends of the bone become immediately displaced.

This is also the case in fractures of the patella, where, notwithstanding all your efforts to prevent the retraction of the muscles, it very seldom happens that you can succeed in supporting a complete approximation of the bones.

36. The second reason for a want of bony union is, the *want of pressure* of one bone on another.

Even if the limb were preserved at its proper length, and admitting the capsular ligament not to be torn, this circumstance would operate to prevent an ossific union. There is a large quantity of synovial fluid secreted into the joint, this distends the ligament, and entirely prevents the contact of the bones. After a time, this fluid becomes absorbed, but not until the inflammatory process has ceased, and ligamentous matter has been effused into the joint from the surface of the synovial membrane.

37. The third and principal reason of the want of ossific union is, the almost entire absence of ossific tion [redacted] in the head of the bone, when detached from the cervix. Its life being supported by the ligamentum teres, which has only a few minute vessels ramifying from it to the head of the Bone.

The natural supply of blood for the neck and head of the bone, is derived from the periosteum; and when the neck is fractured, and the periosteum torn through, the means of ossific action are necessarily cut off. No deposit of cartilage or bone, as in other fractures, is produced, but there is a deposition of ligamentous matter covering the surface of the cancellated structure.

In dissection of these accidents, you find that the cancelli are rendered firm and smooth by friction, as in other bones which rub on each other when their articulating cartilages are absorbed. Portions of bone remain attached by ligament, or are loose and floating in the joint, covered by ligamentous matter; but these do not excite inflammation any more than similar portions which are found in the knee or in the elbow joints. The capsular ligament, and the synovial membrane are very much thickened, from the inflammation which they have undergone, and are therefore very much strengthened. This membrane is sometimes separated from the fractured portions, so as to form a thick band passing from the fractured edges of the cervix to the head of the bone. Ligamentous matter passes also from the cancellated structure of the head to the neck, thus uniting, by a flexible material, the one broken portion of bone to the other.

38. With respect to the treatment of fracture within the capsule, numerous measures have been adopted for the purpose of producing an ossific union, both by myself and others, but all to no purpose.

Disappointed in the attempt, and finding the patient's health suffer from the necessary confinement, what I now direct to be done, is, that a pillow be placed under the limb, throughout the whole length, and another be put under the knee, and the limb be in this way extended for ten days or a fortnight, until the inflammation has subsided. Then let the patient get out of bed, and sit on a high chair, to prevent being too much bent, afterwards walk with crutches, bearing gently at first on the foot, then increase the pressure more and more, until the ligament becomes thickened, and the power of the muscles increased. Next, let him use a shoe with a high heel, which would very much diminish his lameness.

The patient treated in this way, walks after a day or two, with a crutch, then with a stick, and in a few months requires no additional support. But in all cases in which the slightest doubt may be entertained, whether the fracture be within or without the capsule, it is much better to treat them as if they were external to the capsule, and which fractures will unite by bone.

39. *Secondly:—In fractures external* to the capsule, and when the neck of the bone is driven into the cancellated structure of the trochanter major, the leg is from half to three-quarters of an inch *shorter* than the other; and they generally happen in the young, and in persons under fifty years of age.

The foot and toe are *everted*, much pain is felt at the hip, and on the inner and upper part of the thigh, and the usual rotundity of the joint is lost; crepitus is easily produced by a slight motion of the limb, and it is not necessary in this accident, to draw the leg down to feel the crepitus, as the retraction is not so great as in the former accident. There is also usually great extravasation into the surrounding parts, and this swelling is quickly followed by a great tenderness to the touch; also violent pain is produced upon slight motion of the joint, followed by a high degree of constitutional irritation; and many months elapse before the patient recovers a proper use of the limb. The accident is usually the result of very severe injury.

40. The principle to be attended to in the treatment of this fracture, is, the approximation of the bones by pressure.

You must press the trochanter towards the acetabulum, at the same time preserving the length of the limb, by applying a roller around the foot of the injured leg, and binding it firmly to the sound one, thus making the sound limb afford support, and act as a splint to the fractured one. A broad leather strap should be buckled around the pelvis, and include the trochanter major, so as to press the fractured portions of bone firmly together; and the best position in which you can place the limb, is in a straight direction with the body. I have also known cases do very well where the patient has been laid on his back on his mattress, and the thigh brought over the double inclined plane, which may be very easily made by three boards; one passing from the tuberosity of the ischium to the foot, and the two others, having a joint in the middle, by which you can increase the elevation of the angle as may be required: over these a pillow should be thrown. A long splint should be then placed on the outer side of the thigh, fastened above with a strong strap around the pelvis, and secured below by another strap round the knee, so as to prevent the knee being moved from its position. This must be persevered in for several weeks, and the patient may then be allowed to rise from his bed, if the attempt do not give much pain. He must still, however, wear the strap around the pelvis; and he thus recovers, with a useful but shortened limb.

41. *Thirdly:—Fractures through the trochanter major* are generally oblique, and they may happen with-

out any injury being at the same time done to the neck of the bone.

These fractures occur at any period of life, and are marked by the following symptoms: the limb is very little and sometimes not at all shortened; there is a numbness in the foot; the patient cannot turn in bed without assistance, and the attempt is productive of great pain. The trochanter is sometimes drawn forwards towards the ilium, sometimes it falls towards the tuberosity of the ischium, but is generally widely separated from that portion of bone remaining in connection with the neck. The foot is greatly everted, and the patient cannot sit, as any attempt to do so produces very great pain. You can feel a crepitus with great difficulty, if the detached portion of the trochänter be either much fallen, or much drawn forwards.

42. The treatment of this fracture is much the same as that of the former. It unites very firmly, and the patient recovers a good use of the limb.

You should pass a wide bandage round the pelvis, and keep the limb extended, and the patient in the horizontal position, in the way before pointed out.

43. Sometimes the femur is fractured *just beneath the trochanter*, and the deformity produced by this accident is very great, which is caused by the upper end of the bone being drawn upwards by the action of the psoas magnus, and iliacus internus.

The proper way to treat it is by raising the thigh over an inclined plane, and elevating the trunk to about an angle of 45°. In this manner you bring the ends of the bone in apposition, but you should not attempt to depress the upper end of the bone, as it only increases the patient's sufferings to no purpose.

44. When you meet with *fractures of the condyles of the femur*, extending into the joint, you will find great swelling of the joint, a crepitus, and deformity.

In these accidents, you should place the limb on a pillow in the extended position, for then the head of the tibia keeps the extremities of the bone in their places. You should apply evaporating lotions, and leeches if necessary, to subdue the inflammation, and then mould a piece of stout pasteboard, moistened, round the knee, and bind it on with a roller. This, when dry, adapts itself equally to the different surfaces, and forms a most excellent splint to retain the fractured extremities of the bones. After five weeks, you should commence passive motion, otherwise anchylosis will take place.

The same observations apply to *fractures of the head of the tibia*.

45. If a compound fracture extend into the knee joint, and the opening be large, it will be necessary to amputate; but if the opening be small, try to procure adhesion, and thus make it a simple fracture.

FRACTURES OF THE PATELLA.

46. The patella is generally broken 'transversely, but sometimes longitudinally. It is also subject to compound fracture.

47. *Transverse Fracture:*—In this accident, the upper part is drawn from the lower by the action of the muscles inserted into it, whilst the lower part remains fixed by its ligaments. The degree of separation depends on the laceration of the ligament.

The accident is at once known by the depression between the two portions of bone, into which you may put your fingers, and by the upper part of the bone moving readily on the lower and fore part of the thigh. The power of extending the limb is also lost; and the knee bends forwards from a loss of action of the extensor muscles. Soon after the accident, extravasation takes place on the fore part of the joint, and produces a livid appearance, but this is removed by absorption in a few days. There is afterwards considerable effusion from inflammation into the surrounding parts.

48. The union of this fracture is generally by ligament, whether the separation of the bones be great or little; but still the principle which should guide you in the treatment is, to make that ligament as short as possible.

When called to this accident, you should place the patient on a mattress, extend the limb on a well padded splint, which is placed behind the thigh and leg. The patient should be raised as much as he can to the sitting posture, to relax the rectus; an evaporating lotion of white wash should then be applied, and the heel should also be raised towards the trunk, to bring up the lower portion of the patella. If there should be much inflammation continue for a day or two, leeches should be applied, and evaporating lotions continued; and, when the tension has subsided, you may apply your bandages.

The mode generally adopted is, to pass a roller from the foot to the knee, to prevent the swelling of the leg; then rollers are applied above and below the joint, under which a piece of broad tape is passed on each side, which crosses the rollers at right angles, and by tying these, the upper portion is brought down towards the lower.

But the plan which I like best is this: buckle a leather strap around the thigh, above the fractured portion, and from this another strap should be passed beneath the foot, the leg being kept extended and the foot raised; this strap is brought up on the other side of the knee, and buckled to the circular strap above the knee; a roller should also be applied on the leg. After keeping the limb in this position five weeks, you may begin to use slight passive motion, taking great care, however, not to do too much, as you would separate the ligamentous union that had been formed. You may increase this from day to day, until the limb can be bent perfectly.

49. The smallest distance at which I have known the patella to unite, is half an inch, and the greatest distance, seven inches; a moderate distance is one or two inches.

It sometimes happens, that, from the degree of separation, the patient loses the command over the motions of the leg, and in such cases you must exercise the muscles by letting the patient swing his legs over a table, in order to accommodate the muscles to their new line of action. Unless this be done, or passive motion be used, the patient can never recover the use of the limb.

50. *Longitudinal Fracture:*—In the longitudinal fracture of the patella, the bone also unites by ligament. I have seen it unite by bone, but it was rather a fissure than a fracture.

The treatment will be to apply leeches and evaporating lotions; in a few days a roller should be applied, and then a laced cap, with a strap to buckle above and below the knee, with a pad on each side of the patella, to bring the parts as nearly as possible into contact.

51. *Compound Fractures:*—Compound fractures of the patella are very dangerous accidents, frequently proving fatal to life, from the violent degree of constitutional irritation which they occasion.

They are generally recovered from by the following treatment; bring the integuments together by a small suture, apply adhesive straps round the knee, evaporating lotions on the fore-part, and the limb kept extended by a splint passed beneath.

Whenever a joint is laid open, except by a valvular opening, that wound is difficult to heal from the flowing of the synovia, but, if the integuments be brought together by a suture, the parts beneath often heal by the adhesive process. The suture should not be kept in more than a week.

FRACTURES INTO THE ANCLE JOINT.

52. If a compound fracture should extend into the ancle joint, that, of itself, would form no reason why amputation should be performed; but you should be guided principally by the nature of the injury, by the age, and also by the constitution of the patient.

53. If the compound fracture extending into the joint be oblique, it will generally do well, provided care be taken to procure adhesion of the wound.

This is best effected by applying lint dipped in blood to the lacerated integuments, and allowing it to remain there until it separates spontaneously. The many-tailed bandage should be applied, and kept wet with a spiritous lotion, composed of spirits of wine and water. A splint should be applied on each side, padded with cushions, so as to preserve the great toe in a line with the patella. Place the leg on its outer side, in the semiflex position, so as to relax the muscles, and render the patient's position as easy as possible. The position, however, will require to be varied, according to the situation of the wound.

54. In these accidents, if the bone is comminuted, as well as broken into the joint, and if there is bleeding from any large vessel, it will be proper to amputate immediately; more especially if the person is obliged to work hard for his support, for after recovery from comminution, the bone will bear but a slight degree of exertion.

But still, if the constitution be good, and the person is about the middle age, it is right to take away the small pieces of bone, heal the wound by adhesion, and produce anchylosis.

FRACTURES OF THE HUMERUS.

55. In compound fracture of the humerus, let the arm hang by the side, with the fore arm and hand very slightly supported in a sling, so that its weight may not be entirely

taken off the humerus, for it will tend materially to preserve the apposition of the ends of the bone.

Do not keep the patient in bed, for in the recumbent posture the arm is generally placed across the chest, the arm is put on the twist, and the fracture unites badly.

FRACTURES OF THE ELBOW JOINT.

56. Compound fractures of the elbow joint, generally happen through the internal condyles of the os humeri, and the fracture takes an oblique direction into the joint.

57. In the most severe accidents of this kind, the constitution is generally able to support them, if they are judiciously managed.

In all cases of this accident, the arm should be kept in the bent position; for as anchylosis in a greater or less degree will be the consequence, it is attended with much less inconvenience in this position than in any other. Now rather than submit your patient to an amputation, endeavour to heal the wound, by bringing the integuments together, and thus make the case a simple fracture. If a contrary practice is adopted; if poultices, for example, are applied, the adhesive process is prevented, and suppuration produced, which puts life in danger, or renders amputation necessary.

If the bones be very much comminuted and the wound large, all the detached portions of bone should be removed; but in old people, when much injury is done, there is often not sufficient strength to support the suppurative process, and amputation should be recommended.

Even if suppuration should take place in these accidents, it will not be absolutely necessary to amputate, unless any thing should afterwards happen.

FRACTURES OF THE WRIST JOINT.

58. A compound fracture extending into the wrist joint is a very serious accident, when the radius is much comminuted; but it is an injury which does very well when the radius is broken without being much shattered.

If you should meet with a case of this kind, it would be proper, when torn pieces of bone can be felt at the extremity of the radius,

that the wound should be enlarged for their removal; and instead of fomentations and poultices being used, that the wrist should be surrounded by lint dipped in the blood, and a roller loosely applied. The arm should be supported on a splint, so as to keep it perfectly free from motion; evaporating lotions should be applied, and the limb should not be disturbed unless the patient has symptoms of a suppurative process, when a small opening should be made in the bandage to allow of the escape of pus, but still the bandages should be allowed to remain.

59. If there should be much inflammation or constitutional irritation, you must have recourse to appropriate measures for reducing it.

You should take blood from the arm; and apply leeches occasionally. The bowels should be gently opened, but all active purging avoided.

60. If your attempts of reducing inflammation should prove unavailing, and the suppurative process comes on, and extends up the tendons of the fore arm, it will be necessary to amputate.

The operation should not be performed where the tendons are loose in the arm, but further up, in the muscular part of it; you will otherwise havo a sloughy irritable stump.

SUPPURATION IN BONES.

1. Abscesses are sometimes found between the periosteum and surface of the bone; at other times within its cancellated structure; and occasionally, but very rarely, between the lamina forming the shell of the bone.

2. *First:*—When an abscess forms between the periosteum and surface of the bone, it possesses the common characters of the formation of matter.

There is severe pain extending along the surface of the bone; this pain, though severe, is of an obtuse kind; it becomes worse at night, and produces an inequality on the surface of the bone. It is a long time, however, before the periosteum ulcerates; the skin presents a circumscribed blush; you may even feel a fluctuation for a long period before the abscess breaks.

3. When you have ascertained that matter has formed,

it should be evacuated as soon as the redness and fluctuation are distinct. The opening should be small, for if it is left to nature, or a large wound made by the surgeon, the bone is deprived of its supply of blood, the part exfoliates, and granulations afterwards shoot out.

As soon as the matter has been discharged, the periosteum should be placed on the bone, as closely as you can, leaving a small opening for the escape of the matter, and apply at the same time, straps of adhesive plaster round the opening, to keep the periosteum in contact with the bone, and the probability is, that the parts will unite by bone.

The treatment to be further pursued is this: If the bone be much exposed and die, touch it with an acid that will decompose the phosphate of lime, and the cartilaginous part also, and for this purpose the lotion of muriatic acid, commencing with two drops to an ounce of water, or the lotion of nitric acid in the same proportion, will be found the most useful: I think, however, that the diluted nitric acid is the best, it induces a healthy state of the bone and of the other parts.

4. *Second:*—When an abscess forms in the cancellated structure, a peculiar process takes place. The result of the pressure of the abscess is to cause an absorption of the cancellated structure, and in this way, the space for the increase of the abscess continues to be enlarged. It is sometimes called *Medullary Abscess.*

At the time that there is an inflammatory action existing in the medullary membrane, there is a corresponding degree of inflammation going on in the periosteum, which causes a bony crust to be deposited on the surface, which materially increases the size and strength of the bone. But upon that part of the bone least covered by skin and muscles, there is an ulcerative process going on, which overcomes the deposit from the periosteum, and thus the matter is evacuated. In this way, it often happens that there is little of the original bone left, but the weight of the body is principally supported by the new shell of bone which is formed.

5. In these cases, if the constitution is so enfeebled that it cannot deposit a sufficient quantity of bony matter externally, whilst the process of absorption is going on within; then the coats of the bone become so thin, that the bone either breaks, or cannot support the superincumbent pressure.

The best treatment to be pursued in this stage of the disease, is to inject the interior of the bone with the muriatic or nitric acid lotions, the latter is preferable, and at the same time, insist on the observance

of rest. Support the constitution, and avoid all those causes which would produce irritation, either generally or locally.

6. *Third:*—Abscesses in the shell of the bone require to be treated in the same way, and their process of restoration occurs rather quicker than when the abscess is seated more internally.

EXFOLIATION OF BONE.

1. By exfoliation of bone is meant the spontaneous separation of one part from the other; and it may be external or internal.

2. *External:*—When the periosteum is separated to any extent from the surface of the bone, if it be immediately replaced, it will again unite, and no exfoliation will take place; but if it be allowed to remain detached from the surface of the bone for twenty-four hours, it will not re-unite, the bone dies, and is ultimately separated.

The dead portion of the bone appears at first white, but it soon becomes black from the hepatized ammonia formed during the putrefactive process.

3. The separation of the dead from the living portion of the bone, is a tedious process, and is effected by the action of the absorbents on the surfaces of the living bone, removing that part which is in absolute contact with the dead bone; a space is thus formed into which granulations can rise.

When these granulations reach the dead bone, they also act on it, and therefore you find the surface rough and uneven, which is in contact with them, whereas the external surface remains perfectly smooth.

4. The object of your treatment in this disease, should be to quicken the process of the granulations a little, and to act chemically on the parts by the use of acids.

It is right, if we wish to diminish the size of the exfoliation, to bind it upon the granulations, which will absorb a part of it, according to experiments made by Sir William Blizard on this subject.

5. *Internal:*—Internal exfoliation is also a very singular process, which I have already described to you, when speaking of medullary abscess.

In the treatment of this disease, as soon as the bones become loosened, which you may easily know by passing a probe into the wound, what I should advise you to do is this, take away a portion of the new bone, so as to admit of your sawing the old bone into two portions, and then draw them out.

NECROSIS.

1. After amputation in full health, there is often necrosis taking place at the end of the bone forming the stump.

It happens because the bone is exceedingly loaded with phosphate of lime at the time of the operation; but if a man be previously reduced by disease, a thin shell of bone only remains, and the blood vessels have a much more free action on the bone.

EXOSTOSIS.

1. Exostosis is of two kinds, cartilaginous and fungous.

2. *Cartilaginous:*—The cartilaginous exostosis contains only a very small quantity of the phosphate of lime, and grows originally from the inner surface of the periosteum, and spiculæ of bone afterwards shoot into it.

Where the exostoses are cartilaginous, growing from the periosteum, they cease to increase beyond a certain extent, and usually form at the insertion of the triceps adductor magnus. You should make an incision through the integuments, cut through the muscle in the direction of its fibres, and having reached the top of the exostosis, you find the knife easily sinks into it, from its being still partly cartilaginous. Then slit down the muscle on each side, and apply the circular saw invented by Mr. Machim, which is worked by a winch in the handle.

3. When the exostosis arises from the cancellated

structure of the flat bones, and the diseased surface is not large, you may get rid of it by a different plan.

Make an incision through the periosteum covering the tumour, and then separate it further with the knife on each side, and the exostosis will be gradually discharged by a suppurative process.

4. *Fungous:*—The fungous exostosis is rather a nest of bone enveloping the fungus, than constituting the fungus itself. It grows from the medullary membrane.

In the treatment of the fungous exostosis, nothing can be done but to palliate; the growth will proceed in spite of local and constitutional remedies.

MOLLITIES OSSIUM.

1. Mollities ossium is an affection of which we know very little. There appears to be a defect in the assimilating powers of the system, whereby the proper portion of phosphate of lime is not deposited; whereas in rickets there is an excess of cartilaginous material.

What is often called mollities ossium is only rickets, and should be treated accordingly.

ON BURNS AND SCALDS.

1. Burns and Scalds produce three different effects, vesication, desquamation, and gangrene.

2. *First:*—If called in when a *vesication* only is produced, there is no danger, although the vesicles be numerous and extensive. The object is to preserve them from bursting, and therefore do not open them on any account, but allow the serum to accumulate in them, until a new cuticle is produced; the serum escapes, and there is no further mischief.

If you open them, there is a constitutional effort produced, which is followed by considerable inflammation, and sometimes by suppuration, and the sufferings of the patient are very great. All you have to do is to apply evaporating lotions, as the camphorated spirits of wine, or spirits of wine and the diluted solution of the acetate of lead, to prevent the disposition there is in the cuticle to break. A little opium should also be given to allay the irritability.

3. *Second:*—When the burn is severe enough to produce *desquamation*, the most violent symptoms arise; indeed, it is the worst stage of the injury, from leaving the cutis unprotected.

The spirits of turpentine is the best application in this form of burn, as the object is to excite a speedy re-action; and if you apply evaporating lotions, re-action can never take place. Lime water and the oil, and lime water and milk, have been commonly used; but the spirits of turpentine is the best application. Where the constitution is irritable, and it gives violent pain, dilute it with oil, or with oil and lime water, and I think it would then form a very good application.

Give opium and wine as long as the chilly state continues; but as soon as the heat is developed, and the pulse has recovered its power, do not continue it any longer, but employ other means to reduce inflammation when necessary.

4. *Third:*—The third effect sometimes produced, is *gangrene*, or the death of the parts. There is no immediate danger when this takes place, for the constitution does not suffer in the first instance; but it is to be feared when the sphacelated part begins to separate. The absorbents act briskly, and a great discharge follows the separation of the part.

Fomentations and poultices are most useful in these cases, as the turpentine cannot act on the dead surfaces. It is necessary to give wine and opium during the chilly state, as in the former case. The treatment is just the same indeed as in a case of common gangrene, and towards the end, when the process of suppuration is commencing, you may give wine and opium, or ammonia, to support the constitution.

5. After severe burns or scalds, you will often have the most remarkable deformities, and they are usually owing to the natural tendency which there is in the cicatrices to contract. The wounds will often heal smoothly, but afterwards become puckered.

These contractions are apt especially to occur in the neck, by which the skin is united to the chest; and if the arm be the burnt part, the fore-arm becomes united to the upper-arm.

In the case [illegible] is very [illegible]
[illegible] occupying the upper part of
the chest the neck and the greater
portion of the back in a child of
five years old the tumour was there
[illegible] [illegible] ulceration at the end of
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] with covering of
[illegible] [illegible] the [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] and the
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible]

The fingers become united to each other, and the thumb is sometimes bent very much backwards.

6. Such, indeed, is the deformity in many cases, that you ought to give your attention to prevent them as much as you can.

The contraction in the arm may be prevented by passing a splint behind the arm, and keeping the arm extended on it. The same rule should be attended to if there is any danger of the thigh uniting to the abdomen. You should pass a splint behind the thigh, and keep the thigh extended on it, and the contraction will be prevented. With respect to the neck, do what you will, you cannot prevent contractions.

7. In burns or scalds, when the cuticle is removed, and the cutis is in a granulating state, you may produce cuticle over it very easily, by proper treatment.

This object is sometimes well accomplished by sprinkling the granulations with the oxyde of zinc. But a lotion of two grains of the sulphate of zinc, to an ounce of the liquor plumbi subacetatis dilutus, appears the best application to me. Some lint should be dipped in the lotion, and laid on the wound; over this, some folded linen should be placed, and over the whole, a piece of oiled-silk, to prevent evaporation.

END OF PART I.

MANUAL OF SURGERY.

PART. II.

CONTAINING PRACTICAL NOTES SELECTED FROM A SERIES
OF LECTURES ON DISEASES OF THE EYE, DELIVERED

BY

JOSEPH HENRY GREEN, ESQ. F.R.S.

PROFESSOR OF ANATOMY TO THE ROYAL ACADEMY,
SURGEON TO, AND LECTURER ON SURGERY,
ST. THOMAS'S HOSPITAL.

MANUAL OF SURGERY.

DISEASES OF THE EYE AND ITS APPENDAGES.

SECTION I.

In consequence of the various affections of the eye, I shall first speak of simple inflammation of the tunica conjunctiva; then of its modifications, its consequences, and treatment.

SECTION II.

I shall next speak of simple inflammation of the deeper seated tunics, those of the globe of the eye; the consequences of such inflammation, and the treatment which it may be proper to adopt.

SECTION III.

Thirdly, I shall describe the diseases of the humours, and particularly that disease of the crystalline lens which terminates in cataract; and the operations which are necessary for that disease, &c.

SECTION IV.

Lastly, I shall speak of the diseases of the appendages of the eye, their treatment, and the operations required for their cure.

SECTION I.

OF SIMPLE INFLAMMATION OF THE CONJUNCTIVA, ITS MODIFICATIONS, CONSEQUENCES, AND TREATMENT.

SIMPLE INFLAMMATION OF THE CONJUNCTIVA.

1. Simple inflammation of the conjunctiva may be divided, like other inflammations, into *acute* and *chronic*; and first, of the acute.

2. *Acute Ophthalmia:*—The symptoms of the affection in question, do not differ from those of [redacted] inflammation of other parts of the body, except in so far as they are modified by the structure of the part, and by the function of the organ. We will speak of the local appearances, and afterwards of the constitutional derangements.

The first symptom is redness of the part; which is very remarkable, because the blood naturally conveyed by the vessels to this part is colourless. The vessels become injected with red blood. When the irritation continues, the vessels become still more apparent, and at length, all the interlacements and anastomeses of the vessels of the conjunctiva, partake of the inflammation, and present almost one uniform appearance of redness. During this time, more or less pain is experienced: at first, as the vessels become filled, an uneas sensation is felt; this increases, and at length, upon the admission of light, a sharp lancinating pain is experienced; the patient is under the necessity of keeping the eye closed, and, indeed, has some difficulty in raising it, not only from the pain he suffers, but from the degree of fulness and swelling with which it is accompanied. Thi pain goes on increasing, and at length, the patient complains of a burning heat, and a sensation as if some extraneous body wer lodged in the conjunctiva of the lid. At this time, the admission o the least light or air produces such lancinating pain, that the eye spasmodically closed.

The affection is also attended with a more abundant secretion o tears, which at the highest stage of excitement, is suddenly diminished and there is a preternatural dryness of the eyes, producing painfu sensations. A considerable degree of swelling takes place, the con junctiva becomes turgid, from the quantity of blood admitted by th xcute

vessels, and effusion follows. Although the swelling is pretty equally diffused over the whole surface of the conjunctiva, it seems to be the greatest at the transparent cornea, because here the coat is more tightly adherent. The conjunctiva is here elevated in a circular fold, and this appearance is called *chemosis*. The eye-lids are in general more or less swollen. Not only is pain experienced in the eye, from the causes I have mentioned, but also a sense of weight and fulness in the globe of the eye, as if the ball were too large for the socket. The neighbouring parts also, the forehead and temples, partake of the pain; there will be a shooting pain to the maxillary bone, or more deeply seated in the head; and these pains are in some instances extremely violent.

3. The local symptoms, as we have already hinted, are attended with considerable constitutional effects.

There will be a greater or less degree of constitutional irritation; great lassitude; prostration of strength; chilness or rigor followed by heats. The skin will often be hot and dry, pulse quick and hard, stomach affected, and vomiting produced. The patient will also complain of pain in the back, and in short, of all the symptoms which indicate a considerable fever of the sympathetic kind, arising from local irritation.

4. The degree in which the symptoms of this disease occur, will very much depend on the constitution of the patient.

In young and robust persons, there will often be a high degree of local inflammation, without much constitutional irritation; while on the other hand, in delicate and irritable patients, a much less, nay sometimes a very trifling degree of local inflammation, will be accompanied with violent symptoms of constitutional derangement.

5. The principal causes of this complaint are the admission of any extraneous body, and variations of temperature, especially if accompanied by intense heat and light, or partial exposure to drafts of cold air.

It will not be necessary to point out the predisposing causes of this complaint, because they do not differ from the predisposing causes of inflammation in any other part of the body.

6. *Chronic Ophthalmia:*—The term *chronic*, to inflammation of the conjunctiva, is not applied merely with reference to duration of time; it is not only applied to signify that state of congestion and debility of vascular action produced by the acute stage; but it is also applied to that

state of inflammation which from the commencement has a character of atony and debility.

As this is the most frequent form in which you will find this inflammation, whether primary or following the acute stage, it is necessary to attend particularly to the symptoms by which it is distinguished, as the mode of treatment is very different from that which is required in acute inflammation.

7. The symptoms of chronic differ from those of acute inflammation of the conjunctiva, rather in degree than in kind; so that after they have existed for some time in the acute stage, you find the disease gradually passing into the chronic stage.

The redness will be less intense, the pain which accompanies it less acute, the intolerance of light will be less, the chemosis and swelling will be diminished, the effusion of tears less considerable, the constitutional irritation will in a great degree have subsided, and, in short, all the acute symptoms will be mitigated. There will still, however, remain a considerable degree of irritability in the eye, on exposure to light; some artificial defence to exclude the light will be necessary, and the person will still be incapable of applying the organ to the ordinary purposes of vision.

8. The cause of chronic inflammation, both exciting and predisposing, are very similar to those of acute inflammation; but there are many causes which tend to produce this inflammation, accompanied with atony and debility in the very onset, which distinguish it from acute inflammation.

Chronic inflammation of the conjunctiva is very apt to take place, where the patient has for a long time been labouring under disorder of the digestive organs. It is not unfrequently the concomitant of dentition, the measles, or small pox; it sometimes accompanies rheumatism and gout. Frequent intoxication and various other causes may predispose to it. It is also very apt to arise from, or to be kept up by exposure to acrid fumes or smoke in particular trades.

9. In general, inflammation of the conjunctiva is a very manageable complaint. It passes into chronic inflammation after the acute stage has continued for a certain time, and it not unfrequently subsides of itself.

A spontaneous cure must not, however, be depended on, and we ought on no account to neglect or relax in the proper mode of treatment, from any reliance upon such a cure; because by simple inflam-

mation of the deeper seated tunics of the globe of the eye, suppuration may be induced, the organ may at length become permanently disorganized, and the sight of the eye irretrievably lost.

10. The consequences of inflammation of this membrane are very similar to those of inflammation in other parts of the body; namely, effusion, adhesion, suppuration, ulceration, and mortification.

It sometimes terminates in *effusion*, the serum or blood under the conjunctiva rising in a roll above the cornea.

It sometimes produces the *adhesive* process; and when it terminates in this manner, the adhesive matter is deposited under the conjunctiva, which covers the transparent cornea, and is recognised by a hazy appearance at the part. The adhesion is various, hotb in extent and qnantity; it is sometimes so slight as only to produce a simple clonded appearance over a certain part of the cornea, which is technically called *nebula*; it is at other times more considerable in quantity, and produces an appearance of considerable opacity in the cornea, which is usually called *albugo* or *leucoma*.

The inflammation sometimes proceeds to the *suppurative* process; indeed, the tunica conjunctiva appears to be of a nature very analagous to the mucous membranes of the body, and like these, is exceedingly prone to the suppurative stage of inflammation. The suppuration generally proceeds from the surface of the conjunctiva, as from the surface of any mucous membrane in a state of inflammation. In other instances, the formation of pus is circumscribed; a deposit of lymph takes place where the conjunctiva covers the cornea, or in its immediate vicinity, and a little abscess or pustule arises from the centre.

Ulceration is sometimes produced, and this usually occurs in the cornea in consequence of laying open the pustule just alluded to, probably from the denudation or exposure of the cornea.

Lastly, *sloughing* and *mortification* of the cornea is not an uncommon effect of a high degree of suppurative inflammation.

11. *Treatment:*—In the treatment of simple inflammation of the conjunctiva, it will be necessary to adopt at once, with vigour, antiphlogistic remedies, as the best mode of diminishing the action of the heart and arteries; and with this view the use of the lancet should be freely resorted to in the commencement.

You ought not to be satisfied with taking away a certain quantity of blood; as for instance, eight, ten, or sixteen ounces; but you should in this, as in all other cases of acute inflammation, accompanied with hardness of the pulse, make a free orifice in a large vein, and take away a quantity of blood, until some manifest effect is produced upon the action of the heart and arteries; keep your finger on the pulse of the patient, in order to ascertain how the heart is affected, and carry on the bleeding even to faintness. This may prevent the necessity of again having recourse to the lancet; or if it should be necessary to do so, blood may be taken away in much smaller quantities. You will of course be guided by the state of the patient's pulse, as the only criterion.

12. When you have diminished the pulse by general bleeding, leeches may be afterwards conveniently applied, and other resources made beneficial.

The application of leeches in the first instance, except in very large numbers, is seldom sufficient in acute inflammation; three or four will scarcely produce any effect upon it.

Opening the temporal artery has been recommended, and it is attended with very good effect. Some practitioners advise the practice of dividing the vessels of the part by scarifying the conjunctiva, but it is a plan I do not recommend.

13. Great benefit is derived from treatment directed more especially to the body at large; such as diaphoretic medicines; and the constitutional irritation may be materially abated by keeping up the secretions from the intestines, by altering them and rendering them more healthy.

The tartarized antimony should be used with the first view. The bowels should be freely acted upon by doses of calomel, combined with jalap, scammony, or cathartic extract; and the effects of these medicines should be kept up by the exhibition of neutral salts, so as to produce a considerable number of watery stools. At the same time, the diet of the patient should be low, and he should be kept in a state of perfect rest and quietude.

14. When an impression has been produced on the symptoms, by the treatment I have laid down, it will then be proper to adopt other measures.

For instance, where blood has been taken to a considerable extent, the application of a blister to the nape of the neck will be attended with beneficial effects. The treatment of the part should also be considered, the head should be raised, and the access of air or light should also be prevented, by keeping the room darkened. With respect to local applications, both warm and cold remedies may be used with benefit, but the choice should depend entirely on the feelings of the patient; if he does not find relief from warm, you should then try the effects of cold applications.

15. Such is the plan of treatment you would adopt in acute inflammation of the conjunctiva; but when the *chronic stage* has commenced, you must pursue a different course.

The evacuating plan may to a considerable extent be laid aside; the diet, though not stimulating, may be more generous; there will

be no necessity for continuing the diaphoretic medicines, as the skin will generally be sufficiently moist; nor will it be necessary to evacuate the bowels so freely, though every attention should be paid to their due action; alterative medicines will often be found beneficial.

16. The local applications which are used for the chronic inflammation, should be entirely different from those used in the acute. They ought to be moderately astringent and stimulating, as your object now is to excite some degree of action in the vessels, and to get rid of their relaxation and atony, care being taken not to stimulate the parts too much.

Various collyria or eye-waters are used for this purpose, all of them moderately astringent or stimulating; such as the solution of alum in water, solutions of the sulphate of zinc or the sulphate of copper, or the liquor plumbi subacetatis. These solutions at first should be very much diluted, and afterwards gradually strengthened in proportion to their action on the part, and the degree of stimulus which may be produced.

To judge how far the stimulus may be carried, the criterion is exceedingly simple; if you find that a certain degree of smarting and pain is produced, which soon subsides, and leaves the patient much more easy than before, you may be convinced that the collyrium is beneficial; if on the other hand, the patient experiences a great degree of pain, which does not subside speedily, and the vessels become turgid, you may be assured that the collyrium is doing harm, and that the quantity of stimulus ought to be diminished.

17. Among the numerous applications recommended in this complaint, we will speak of those most frequently employed, and the manner of using them.

Those commonly employed are the solution of alum in water, solutions of the sulphate of zinc, or the sulphate of copper; or the liquor plumbi subacetatis; and the best mode of applying these eye-washes is to inject them by means of a silver or ivory syringe, introduced under the lids every three or four hours. In this way you may be certain that the solution is diffused over the whole surface of the conjunctiva. An eye-cup will answer the purpose very well, if the person after immersing his eye in the cup, has the courage to open it. They will succeed better with the chill off than otherwise. The vinum opii seems to be one of the best stimuli which can be employed in chronic ophthalmia; it acts as a mild astringent, and at the same time, by its soothing quality, sheaths the effect of the stimulus. so that no pain is produced; it may be employed in the quantity of one drop, or even of two or three drops, two, three, or four times a day. It will be best to drop it into the inner canthus of the eye, with a camel-hair pencil; the patient should then shut his eye, and move it about, so that the fluid may be diffused over the whole surface. The patient should wear no bandages, have no other protection than a shade; and if he can bear a moderate degree of light, it should be freely admitted.

In addition to the local treatment we have gone through, you must give those medicines which will act on the morbid state of the constitution.

PURULENT OPHTHALMIA.

18. Suppurative inflammation of the conjunctiva is the most severe form of inflammation in that membrane.

It is exceedingly acute, very rapid in its progress, and often very destructive in its ultimate effects; consequently requires very active treatment.

19. The symptoms of purulent ophthalmia are so manifest, that there can be no doubt of the nature of the complaint, its prominent character being the formation of a considerable quantity of purulent matter. In other respects the symptoms are not very different from those which characterize inflammation generally.

The patient at first feels an uneasy sensation about the eyes; next some degree of pain on the admission of light; redness, and swelling of the part; eyelids swollen; conjunctiva, where it covers the fore part of the globe of the eye, is tumid; considerable chemosis, and often such turgescence of the upper lid as to prevent the patient from raising it. The lids are often so much tumified as to become everted, so that a sort of roll of the lid is formed. These are the symptoms which precede the discharge of matter. A fluid first appears which is not opaque, and has the character of tenacious mucus; in the course of twenty-four hours it assumes the appearance of pus. It is thick, yellow, sometimes green, and poured out in considerable quantity. The tunica conjunctiva has the appearance of a villous membrane highly injected.

20. The acute stage of purulent ophthalmia is of very short duration; it has a tendency to pass rapidly into the atonic stage, in which there is action without power; and congestion of the vessels of the part.

At this time the violence of the acute symptoms is mitigated, but the patient labours under considerable prostration of strength.

21. Purulent ophthalmia has a great tendency also to terminate in sloughing.

Sometimes the sloughing commences in a small portion, and gradually lamella after lamella is destroyed, until the aperture assumes a funnel-like shape; at other times a slough forms in a considerable portion of cornea at once, and opens into the anterior chamber.

22. The causes of purulent ophthalmia are various: It is often occasioned by the violent degree of inflammation produced by some highly irritating substance; and it occasionally occurs in new born infants.

In the last case, it is doubtful whether it arises from the first exposure of the eye to the light, or, as is commonly supposed, from the vaginal secretions to the eyes of the child on its passage into the world. It generally takes place in the first week or month after the birth of the child, and seldom later than three months.

23. Another, and one of the most violent forms of purulent ophthalmia, is that which is called *gonorrhœal*, from its being produced by the application of gonorrhœal matter to the conjunctiva.

This of all others produces the most intense degree of inflammation; and although it is said upon good authority to be depending on a metastasis of the gonorrhœal symptoms from the urethra to the conjunctiva, I have never seen a case in which I could entertain the least suspicion that the complaint was produced in that way, and I do not think that there is sufficient evidence to establish such an opinion.

24. There is another form of ophthalmia, which has been called the *Epidemic* or *Egyptian.*

Although we cannot correctly ascertain the cause of this affection, there can be no doubt that it arises spontaneously, and often attacks epidemically a number of persons in the same district.

25. *Treatment:*—The treatment of purulent ophthalmia must obviously very much depend on the stage of the complaint.

During the first stage, when all the indications of acute inflammation are present, you must bleed largely from the arm of the patient; topical bleeding is out of the question except with children. All the other antiphlogistic remedies, which I before enumerated to you, are to be put in practice in this case. Purgatives should be administered so as to produce a considerable quantity of watery stools; diaphoretic medicines, and especially the tartarized antimony, in doses of a quarter to half a grain, should be given at such intervals, as to keep the patient in a state of nausea; and topical applications should be employed very much in the same manner as in simple inflammation. During the first stage of the complaint, moist warmth in the form of fomentations and poultices, will be found beneficial: the acute stage however, is of very short duration, and they are not to be continued beyond that period.

26. The extent to which the antiphlogistic plan should be carried, must vary according to the violence of the complaint, and the constitution of the patient.

You must not in any constitution be deterred from adopting an active plan of treatment until you have produced a manifest effect on the system of the patient; until the pulse becomes soft; the skin moist; the pain, swelling, tension, and throbbing of the eyes considerably abated; the chemosis diminished; and, in fact, all the acute symptoms more or less subdued. When this is the case, the subsequent treatment will in general be very easy.

27. If it should happen that you are not called upon for this complaint until it has arrived at a chronic stage, when the conjunctiva is feebly pouring out pus; the pulse depressed; the skin cold and clammy; the countenance sallow; and when the constitution has materially suffered from the progress of disease, an entirely different plan of treatment will be required.

Gently stimulating applications should be employed by means of a syringe, so as to cleanse the conjunctiva, and free it from the pus which has collected on its surface, and at the same time stimulate the relaxed vessels.

In general it will be necessary to employ tonic remedies, such as bark, for instance; always attending to the due action of the bowels, without which, tonics would be useless, and even injurious.

28. With respect to the treatment of the sloughing cornea, some nicety will be required. When you have ascertained that the sloughing process is commencing, from the hazy or opaque appearance of the cornea, the antiphlogistic must be changed for a gently stimulating and tonic plan of treatment.

Weak astringent collyria should be used to favour the throwing off of the sloughs. Observe the process of the sloughing from time to time; if there is a firm layer beneath, the patient is going on well, but if the sloughing has a flocculent, soft, ash-coloured appearance, in addition to mild stimulants to the part, you should employ tonic remedies, such as bark.

29. The errors in the treatment of purulent ophthalmia may be comprised in two words; they consist either in continuing the depleting plan too long, or not resorting to it sufficiently early.

If the antiphlogistic plan be not adopted at a very early stage of the disease, the tonic treatment will afterwards be of no service; and

on the other hand, if you continue the depleting plan too long, you will check the restorative process, and the beneficial effects which nature would otherwise assist in producing.

STRUMOUS OPHTHALMIA.

30. Strumous or scrofulous ophthalmia, is so called, because it is met with in those persons who are of a scrofulous diathesis. It occurs in children and not unfrequently in adults.

In this affection, the inflammation is of the chronic kind from the commencement; *the patient cannot bear the least access of light;* there is great difficulty of opening the lids, the orbicularis palpebrarum is spasmodically contracted, and so difficult is it for the patient to open the eyes, that he can seldom do it.

The only way by which this can be done, is fixing the head of the patient, when it is a child, between your knees; with the fore finger of the one hand to raise the upper lid, and that of the other to depress the lower, which will give you an opportunity of seeing the eye; but in doing this, great caution will be required to prevent eversion of the under lid, or any undue violence to the part.

31. In this complaint, it is of the greatest importance that the cornea should be narrowly watched, for, if the inflammation continues for a long time, ulcers are very apt to form on it.

Disorganization of the different parts of the eye often takes place; the cornea, or rather conjunctiva covering it, becomes covered with an opaque capsule, with vessels shooting over the cornea, so as to give it an herpetic appearance; that is, there will be seen over the cornea, yellow spots, which are deposits of lymph. These open into small ulcers, which are streaked with vessels carrying red blood. The eye becomes very painful, and extremely irritable, and there is often, in this state, intense redness of the conjunctiva.

Under these circumstances, similar ulcers form in different parts of the cornea. The formation of these ulcers produces all the symptoms of acute inflammation of the eye, and the organ not unfrequently becomes slowly and gradually disorganized. So long, however, as the cornea continues bright, and of its natural colour, there will be no danger to be apprehended from the formation of ulcers.

32. *Treatment:*—Although strumous ophthalmia is of the chronic nature, there is still considerable irritation; and as the constitution in which it occurs is of an unhealthy character, your treatment must be both general and local. First, constitutional.

The mild depleting plan must be first adopted, regulated as far as the constitution will bear it; you must remove the symptoms of irritation; open the bowels freely by calomel purges, repeated more or less frequently, as they improve the secretions. Alterative mercurial medicines should then be given, and if necessary they should be combined with rhubarb and magnesia, but not so as to produce watery stools.

When the fever becomes diminished, the bowels perform their natural functions, the tongue looks clean, and the skin assumes its healthy feel, you may begin with tonic remedies, and alter the diet, &c. Aromatic bitters, combined with alkalies; light and nutritious diet; warm clothing; moderate exercise; sea bathing, &c.

33. As for the treatment of the part affected, it will be right to employ depletion at the onset, and mild astringent applications afterwards.

Leeches should be employed; it will also be proper to apply blisters behind the ears, or to the nape of the neck; and blisters in this complaint are no ordinary remedy; warm and moist applications are beneficial; the steam of water containing opium will also prove useful. If any of these applications be used at the onset, they must not be long continued; mild astringent collyria must be had recourse to, and their strength must be regulated by the feelings of the patient. The vinum opii is particularly adapted to the purpose in question. Alteratives are also sometimes necessary.

PSOROPHTHALMY.

34. Psorophthalmy is an inflammation particularly of that part of the conjunctiva which lines the lids, but it extends sometimes over the whole of the conjunctiva, covering the globe.

This complaint is very nearly allied to strumous ophthalmia, because it is in general a consequence of it; it is characterized by the same intolerance of light; the inflammation is of the chronic kind, and the patient complains of a sensation as if there were some extraneous body in the eye, grit or sand, which gives rise to an effusion of tears.

At the origin of the disease, there is a glutinous matter secreted on the edge of the lids; ulcers form; and there is often great difficulty in separating the lids from one another. By this means, matter lodges on the lids, and tends to keep up the irritation of the whole of the part; the redness sometimes extends down the cheek, and excoriation of the cuticle takes place. There are also numerous other circumstances attending this complaint.

35. This affection of the eye is of difficult management,

and is frequently found in persons of a scrofulous diathesis; in children of large towns, who are ill fed and badly clothed, with little attention to cleanliness. It is a complaint very obstinate in its cure; and if relieved, it generally returns and becomes as bad as ever.

The affection is not, however, confined to the lower classes, but the higher and middling ranks of society are sometimes attacked with it; those who are of the scrofulous diathesis. In schools also it will be found; it frequently arises from the irritating matter being applied to the lid, which may be conveyed from one to another by using the same towel, or in some such way.

36. *Treatment:*—The treatment of psorophthalmy does not essentially differ from that of the strumous; it is an inflammation without power; one of the atonic kind. Your remedies must be both constitutional and local.

Depletion must not be pursued to any extent. It will be right when any symptoms of irritation are present, to remove them by the application of leeches, and gently opening the bowels by mild aperients, combined with mercurial medicines, such as calomel, the hydrargyrus cum cretâ, or the blue pill, and in quantities so as to give tone to the system. When any febrile excitement that may have existed is removed, begin with tonic remedies; that is, when the skin is clean, and the secretions from the bowels are regular in their quantity and quality.

The applications to the part should consist of stimulants, and the best form in which they can be employed is that of ointment. Any of the milder stimulating mercurial ointments will do; and their degree of strength must be regulated by the effect on the eye. The use of the vinum opii will be attended with beneficial results, and the application of blisters will have an universally good effect, but they should always be healed immediately, and repeated again if required.

37. The *consequences of inflammation of the eye*, requiring distinct notice, and which are accompanied with an equal or less inflammation of the conjunctiva, and kept up or excited by attendant circumstances, are now to be spoken of.

NEBULA.

38. This complaint is so called from the nebulous or cloudy appearance of the transparent part of the eye, which is produced by deposits of lymph into the conjunctiva covering the cornea.

The membrane or layer stretched over the cornea, will vary according to the more or less relaxed state of the vessels of the conjunctiva, which will be seen carrying red blood to the part. The veins corresponding to the nebulous parts, will become turgid and prominent.

39. *Treatment:*—The inflammation in this affection is generally of the chronic kind, and arises from a relaxed state of the vessels, which require stimulating applications, in order that they may recover their tone and convey the blood uninterruptedly.

If the vessels be stimulated, the blood will be likely to flow through the veins; the absorbents will be excited, and remove the effused lymph. If there is considerable inflammation, it must be removed by active means; and in these cases it will be proper to deplete.

40. Care must be taken that in the treatment of this complaint, no undue degree of stimulus be employed; if there should be inflammation it will be increased, and the complaint be as bad as ever.

By stimulating applications, the cornea will frequently be restored to the same transparency as before the attack. A good stimulus which may be used, is one with the sulphate of zinc, containing about a grain to an ounce of water, gradually increased in strength.

PUSTULES.

41. Pustules are generally seated at the junction of the transparent with the opaque cornea; but they sometimes occur in the cornea itself, or on the conjunctiva covering it or the ball. They are seated in different parts.

The appearances they present at first, are red or yellowish spots arising from a deposit of lymph in those parts, and are slightly elevated. There is considerable turgescence of the vessels around them. If they occur on the cornea, it will be nebulous and opaque; the vessels round the cornea will be seen distended, carrying red blood, and having a radiated disposition.

42. If the lymph secreted in this complaint, is not absorbed, the pustules break, matter escapes, and ulcers form in their place.

Sometimes there is only one of these ulcers, frequently two, one

on each side of the cornea, just at the junction of the transparent with the opaque cornea, and occasionally the cornea is encircled by them. They are very difficult to cure, and easily re-produced.

43. *Treatment:*—As for the treatment which pustules require, if there should be much inflammation, you must deplete; but as the inflammation is of the tonic kind, depletion must not be pursued to too great an extent at the outset. The system must be invigorated by tonic remedies, and tone given to the vessels of the part.

First, apply leeches, not in too large numbers; evacuate the bowels by mild aperients; and attend to the secretions: blisters will be useful if the sight be affected. When the state of the bowels has been regulated, you must begin with tonic remedies, and as early as possible with astringent collyria, and the best is the vinum opii.

FUNGUS OF THE CONJUNCTIVA.

44. This appearance of the conjunctiva, is the result of purulent ophthalmia, and occurs in diseased persons. The conjunctiva becomes loose and red, the vessels turgid with blood, and there is a fold of this membrane on the inside of the lids, which produces considerable irregularity on its surface; a morbid secretion is kept up on the part, and not unfrequently eversion of the lids is the result.

Extraneous bodies often enter the eye, and disturb it considerably. To prevent this, and remedy the complaint, the loose portion of the conjunctiva should be removed, which is a very easy operation: an assistant holding the lid, you, by means of a pair of curved scissors, remove it. As to the after treatment, you must keep down inflammation, should it appear, by the means already recommended.

GRANULATIONS OF THE CONJUNCTIVA.

45. These are nothing more than loose irregularities of this membrane, where it lines the lids.

These projections continue to pour out a morbid secretion, which stimulates and irritates the whole eye; the palpebral conjunctiva becomes altered in its texture, and its surface is covered with a fleshy elevation, having the exact appearance of granulations. These granulations covering the surface of the conjunctiva lining the lids, are constantly rubbed over the globe of the eye whenever it moves, producing pain and irritation, and keeping up morbid secretion, and, in fact, giving rise to chronic ophthalmia.

46. *Treatment:*—Granulations of the conjunctiva, if not removed or remedied, produce ultimate blindness.

Cases of this complaint are difficult to cure; and the remedies you are to use are, caustic applications and the division of the varicose and enlarged vessels. These may be aided by setons, issues, blisters, and attention to the general health.

ENCANTHIS.

47. This consists in an alteration of the structure of the caruncula lachrymalis, and neighbouring semilunar fold of the conjunctiva.

In this complaint, the caruncula is enlarged; at the commencement it has a granulated appearance, which it loses as it increases, and then becomes similar to a hazel nut, being ash-coloured and streaked with varicose vessels. This enlargement or excrescence prevents the lids from closing, and allows extraneous matter to enter, which keeps up inflammation of the eye, and it also presses on the puncta lachrymalia, and turns them out of their place: the tears, thus prevented from getting into the lachrymal sac, are effused on the cheek.

48. *Treatment:*—The best treatment you can adopt for the cure of this complaint, is the entire removal of the diseased part.

The operation should be thus performed: an assistant is to raise the lid, you then take up the tumour with a pair of forceps, and remove it with a pair of curved scissors with convex edges.

49. When this complaint has not assumed the malignant form, it is always remediable by excision. Never operate, however, when the encanthis has become of the malignant kind, and put on the cancerous appearance.

This will be known by the dull red colour of the excrescence, its excessive hardness, lancinating pains extending to the eye-ball and forehead, particularly when touched, foul ulcers with irregular edges, having all the appearance of cancer in other parts of the body.

PTERYGIUM.

50. This is always of the triangular shape, and may be divided into the membranous and fleshy.

51. *Membranous Pterygium:*—This kind has the appearance of a thin film of minute vessels converging towards the cornea.

The usual seat of this affection is towards the inner canthus, that is, with the base at the canthus, and the apex against the cornea, It is always of a triangular shape, and the vessels proceed from the base to the apex.

52. *Fleshy Pterygium:*—The fleshy pterygium differs from the membranous, and is more vascular.

They first appear of a yellowish colour; then the vessels running through them become large, and they have a red appearance; but always retain their triangular shape.

53. *Treatment:*—When a pterygium has proceeded far on the transparent part of the eye, the only treatment to adopt will be the removal of a part of the pterygium.

This consists simply in raising the membrane as near as you can to the cornea, and cutting it through whilst suspended. When the pterygia are fleshy, more care must be taken in dividing them; they must be divided more to the margin of the cornea, and turned back from the apex towards the base.

SECTION II.

SIMPLE INFLAMMATION OF THE DEEPER SEATED TUNICS; THOSE OF THE GLOBE OF THE EYE; THE CONSEQUENCES OF SUCH INFLAMMATION, AND THE NECESSARY PLANS OF TREATMENT.

INFLAMMATION AND ULCERATION OF THE CORNEA.

1. *Inflammation:*—At the outset, in inflammation attacking the transparent cornea, there is a hazy appearance, the cornea loses its natural lustre, and in a short time there may be discovered on its surface, vessels carrying red blood, and then the symptoms will be the same as those of inflammation in general; the patient will complain of intolerance of light, and also have effusion of tears.

2. If the inflammation of the cornea should continue, matter very frequently forms between its lamellæ, and the appearance which it then assumes is called *onyx* or *unguis*, from its resemblance to a nail; the matter is to be very distinctly seen in the transparent part of the eye, and gradually extends till it occupies one-third or fourth of the cornea.

If you place the eye in profile, you can generally observe yellow spots, which are usually seated at the anterior part of the cornea, and if you employ gentle pressure with a probe, the fluid may be felt fluctuating within. In the various positions of the head, the matter does not shift its situation, but remains in the same spot.

By proper treatment, the matter often becomes absorbed; but it not unfrequently makes its way externally, or an opening is formed internally, and the matter then is effused into the anterior chamber of the eye.

3. *Ulceration:*—Ulceration of the cornea is the common consequence of inflammation of the cornea; but it is

very frequently produced by the contact of matter in purulent ophthalmia; or, in fact, any irritating substance, mechanical or chemical, that may be introduced into the eye. The inflammation produces the formation of pus; this breaks and an ulcer is formed.

In ulcers of the cornea, you will find the edges rugged, uneven, and elevated, the ulcer itself having an ash-coloured appearance, and the patient complaining of great pain; there will also be a discharge of a good deal of acrid and irritating matter. In general there will be no difficulty in distinguishing ulcers of the cornea; all you have to do, is to put the eye in profile, and take a side view of this organ, and you will see the ulcer with the appearances I have described.

4. The situation of ulcers of the cornea varies; as also do the ulcers vary in their appearance.

Very frequently these ulcers are at the superior portion, and affecting only the external lamellæ; in other cases, spreading over the whole cornea, and penetrating into the anterior chamber, by which means the aqueous humour escapes, and the iris is often protruded; sometimes even the opening becomes enlarged, and the crystalline lens and vitreous humour escape. Some ulcers are large and others small, and those which are small, on cicatrization, do not materially obstruct vision, whilst those that are large, when healed, produce a nebulous appearance, which destroys the power of sight.

5. *Treatment:*—The treatment required in inflammation of the cornea does not materially differ from that of inflammation of the conjunctiva, or any other part of the eye.

You must rely upon the efficacy of a strict antiphlogistic plan, and when the acute inflammation has been subdued, on the use of mild astringent collyria.

6. When ulcers form in any part of the cornea, it will be proper to use active means, if they are accompanied with acute inflammation; but most frequently, they are accompanied by chronic ophthalmia, and have a disposition to spread rather than heal.

When they are of a spreading disposition, astringent lotions will be of great service; but of all remedies in ulcers of the cornea, the nitrate of silver is the one on which you are to depend: it is generally used in the state of solution, about two grains to an ounce of water; or it may be better to begin with a grain to an ounce, regulating the strength in proportion to the degree of irritation it may produce.

When ulcers of the cornea are attended with acute inflammation, it will be necessary to employ bleeding, by leeches, before the use of astringents, and at the same time to keep the bowels regular by mild aperients.

During the progress of the ulcers, it will be necessary to watch them very closely, and examine them frequently; but in doing so, great caution must be used lest the eye-lids become everted.

7. When ulcers of the cornea heal, it is by cicatrization, as in any other part of the body.

The specks which are left upon cicatrization, are nothing more than rounded spots of coagulable lymph, and are denominated *leucoma* or *albugo*; and in these cases, the rays of light are not prevented entering the eye, except when the spots are on the axis of vision.

STAPHYLOMA.

8. In this disease, the cornea becomes opaque, considerably elevated, and altered in texture. It frequently comes on after small-pox, and is one of the sequelæ belonging to that formidable complaint.

In staphyloma, the eye-lids are prevented from being closed; there is perpetual irritation kept up by friction of the palpebræ on the ball. By the separation of the lids, extraneous bodies often enter the eye, irritation is produced by the friction of the lids and eyelashes, and thus a considerable degree of inconvenience is produced to the patient, and the eye kept in a state of chronic ophthalmy; and the sound eye becomes sympathetically affected. The iris often protrudes; the vitreous humour is altered in texture; and the crystalline lens is projected forwards.

9. *Treatment:*—In this complaint, nothing can be done for the restoration of sight; and the only plan of treatment will be to remove the staphylomatous part, so as to return the eye within the orbit, and permit the use of an artificial eye.

The operation is exceedingly simple: the surgeon first passes a needle with a ligature, through the staphylomatous part, in order to steady the eye; and then, with the other hand, takes the cornea knife, and removes as much of the projecting part as may be necessary; the operation gives little pain; it generally happens that the iris adheres to the cornea, and that a portion of it is removed. The crystalline lens escapes, together with a portion of vitreous humour, and the eye collapses, so that when the part is healed, an artificial eye may be worn.

IRITIS.

10. Inflammation of the iris is a peculiar and specific inflammation, attended with symptoms which, in some cases, are with difficulty recognized.

In looking into the eye, you see the iris changed in colour, or having a brownish hue, or rather a reddish brown colour, (this, however, varies according to the natural colour of the iris,) from the increased number of vessels on its surface carrying red blood. The iris itself is altered in texture, being puckered and thickened. These appearances are soon removed, and deposits of yellow lymph, resembling yellow tubercles, will be seen on the iris, the pupil becomes irregular and altered in shape, and the pupillary margin of the iris thickened and turned back towards the posterior chamber. These are the principal symptoms by which you recognize iritis; but there are many other marked appearances.

11. Inflammation of the iris often comes on from very slight causes; it occasionally happens in those who have been under the influence of mercury, and in persons of a scrofulous diathesis.

Iritis has, in consequence of its occurring so frequently after syphilis, been classed as a secondary symptom of that complaint; I have, I must say, considerable doubt on the subject, for I have never met with it in a person labouring at the same time under any other secondary symptoms of syphilis, with eruptions or nodes on the bones; and also I have never met with a case of iritis after syphilis, but where mercury had been previously given, and therefore I cannot say whether the inflammation of the iris was the effect of the mercury, or of the original disease for which it was given.

12. *Ophthalmitis:*—Iritis is not unfrequently accompanied by inflammation of the tunics of the eye, which may be called ophthalmitis, or deep seated inflammation of the globe of the eye.

In this complaint, the sclerotic appears reddened, the cornea is dull, and the capsule of the lens itself becomes opaque: all these participate in the inflammation. There is a deposition of lymph on the edges of the iris, and there are also adhesions of it in some places to the crystalline lens. The sclerotic coat, however, is particularly inflamed; the vessels may be seen carrying the blood in a straight course, whilst those of the conjunctiva are tortuous. There is pain in the eye, intolerance of light; so that these symptoms, together with a turbid state of the humours, are sufficient to inform one of the presence of inflammation of the sclerotic coat; the patient also labours at the same time under great febrile excitement.

13. The result of this severe form of inflammation, if it be not checked, is effusion of lymph or matter into the anterior chamber of the eye, producing what is technically called *Hypopium*.

In these cases, the matter may be easily observed, and sometimes there is so much as to conceal the edges of the pupil and the iris.

14. *Treatment:*—In the treatment of iritis, you must, of course, adopt all the steps of depletion as in other inflammations of the eye; but in addition to these, there are also one or two other remedies.

There is one remedy above all others on which you are to rely, and that is mercury; it must be given so as to affect the constitution, till the gums and mouth are sore, or the saliva begins to flow, which will be the signs of it, and the best form in which you can give mercury is that of calomel; let it be given internally after the bleeding, in the dose of two to three grains, combined with about a quarter of a grain of opium, so as to prevent its acting on the bowels. In order that the calomel may affect the system, it must be given every four or six hours, till the mouth is sore; in more chronic forms of this complaint, it may be given less frequently. As soon as the system has become affected, you will see the zone of vessels disappearing, the lymph absorbed, the aqueous humour becoming clear, and the cornea losing its hazy appearance.

Other remedies have been recommended, but there is not one on which you can rely but the exhibition of mercury. Belladonna will be found a very useful adjunct in this complaint; by dilating the pupils, the adhesions are often prevented from forming between the iris and capsule of the crystalline lens, and when they are formed, it tends to elongate the adhesions. The belladonna should be applied in the form of extract, around the eye, morning and evening.

AMAUROSIS.

15. By amaurosis I mean partial or total loss of vision, arising from paralysis of the optic nerve or retina; and this is produced by a congestion of the vessels of the part, or minute alteration of its structure.

The persons subjected to this complaint, are those who have been in the habit of viewing minute objects, or exposing the eyes to strong

light; and those who are affected with amaurosis, are frequently troubled with false appearances, as flashes of light, or balls of fire before their eyes.

16. The symptoms of this complaint are few, and therefore require to be well known.

The pupil is generally dilated and motionless; the iris is nearly immoveable, and acts very little, and vision is completely destroyed. There is also slight strabismus. There is frequently the sensation as if a cloud were before the eye, which is termed *caligo*, and there is often a greenish appearance of the humours, which is named *glaucoma*. This depends on an alteration of the lens, or an alteration in the structure of the vitreous humour.

17. *Causes:*—The causes of amaurosis I shall divide into three parts; those which affect the retina or optic nerve; those affecting the brain, or that part of it from which the optic nerve arises, the thalami nervorum opticorum; and, lastly, those affecting the body at large, or some particular organ, and thus sympathetically affecting the eye.

First: the structure is sometimes altered by disease or violence, laceration from wounds, blows, the changes from inflammation, pressure from tumours, accumulation of the humours of the eye, paralysis from exhausted sensibility, as by the frequent viewing minute or brilliant objects, too strong light, the use of magnifying or telescopic glasses, or suddenly by a strong transition from darkness to light, as that of the sun, lightning, &c.

Second: the second class of causes consists of affections of the brain, such are plethora, an increased action, a fulness of the vessels of the brain, and from pressure on the brain from humours, apoplectic effusion, hydrocephalus, injuries to the head, &c.

Third: the third set are those causes, which operating through the nervous system, depend upon some condition of the body at large, or irritation in a distant part. Such are general debility, palsy from lead, irritation in the prima via from disorder of the biliary secretions, or digestive organs generally, worms, &c.

18. *Treatment:*—Although the prognosis in this disease is unfavorable, yet we are not to give up all hopes of benefit from treatment. It is, however, especially necessary to distinguish those cases which admit of cure or amendment, and to ascertain in these the cause upon which the affection depends.

In those cases of amaurosis which are accompanied by, or dependent upon inflammation of the organ, the active antiphlogistic treatment requisite for that condition may relieve the retina. In those cases in which it depends upon plethora, congestion or action of vessels in the brain, the appropriate treatment for such disorder, will suit the amaurosis. In cases where the disorder is in the prima via, the clearing of the stomach and intestines, and the restoring of its healthy secretions, will be the indication. Where the amaurosis depends upon debility, the use of bark and other tonics and stimulants, will be requisite. In cases which depend upon some paralytic or torpid state of the part, we use stimulants (the liquor ammoniæ puræ, of which the vapours are directed against the eye), friction on the eyebrows, of stimulating liniments, sternutatious powders, blisters, electricity, and in some cases, manifest advantage has been derived from a mercurial course.

19. Whatever may be your plans of treatment for this complaint, you will find that there are many cases incapable of cure, many others which are but slightly benefitted; and that the cases most likely to be successful, are those depending upon some obvious and remediable cause, and those only when incipient.

SECTION III.

DISEASES OF THE HUMOURS OF THE EYE; CATARACT; THE OPERATIONS REQUIRED FOR THAT DISEASE; FUNGUS HÆMATODES, &c.

Most of the diseases to which the humours are subject, attack the crystalline lens or its capsule.

HYDROPHTHALMIA.

1. The aqueous humour is sometimes the subject of an accumulation, which is known by the name of hydrophthalmia or dropsy of the eye; and consists in an increased secretion of this humour. On what the complaint depends it would be difficult to say; it is generally preceded by chronic ophthalmia.

Under this complaint, the eye becomes more distended than natural; the cornea widened; the sclerotic coat attached to the cornea, has a blue tint or cast; the sight is affected; the motion of the iris is impaired; and the disease at last terminates in amaurosis.

2. *Treatment:*—The remedies recommended for this complaint are various, of the most opposite kind, and have been tried generally without any good effect.

Puncturing the cornea at a short distance from the sclerotic, has been tried, and it is said, with success. I have, however, seen several cases of this affection, and no benefit whatever was derived from any means that were employed.

GLAUCOMA.

3. In this complaint, the vitreous humour becomes altered in texture, more dense, and presents a sea-green hue, and the pupil is dilated.

Glaucoma is often mistaken for cataract, and a person affected with it is frequently supposed to have a cataract in its incipient stage. On examining the eye minutely, this greenish appearance may be observed to be behind the crystalline lens, and posterior to the seat of the cataract; it may, however, be mistaken for many diseases, but has a greater resemblance to cataract than any other.

CATARACT.

4. By cataract is meant, an opacity of the crystalline lens, or its capsule: the cataract depending on a morbid secretion of the liquor morgagni being very rare.

5. The symptoms of cataract are unequivocal, and may be easily recognised.

At first, there is always defect of vision, and the patient sees things as through a mist, and requires a strong light to see them plainly; this symptom changes during the progress of the complaint, the patient being able to see better in a moderate than a strong light, and then a speck or opacity in the lens or capsule, may be distinctly observed; it is generally in the centre of the pupil, and at the situation of the lens; this gradually enlarges, and in proportion as the opacity increases, the sight becomes more dim, and the capability of discerning objects diminishes.

These symptoms of cataract differ in the different kinds; and the diagnostic marks of each, we shall hereafter speak of.

6. There are four kinds of cataract: viz. the hard or firm; the milky or fluid cataract; the soft or caseous; and besides these, there is a fourth kind, the capsular cataract; the three first forming in the lens itself, and the last in the capsule. There is also a congenital cataract.

7. *Firm or Hard Cataract:*—In this kind of cataract, the lens acquires a greater degree of density or firmness than natural; and in undergoing this change, it becomes smaller and thinner, and more concentrated.

This cataract is to be known by its amber colour and size; by the interspace between the iris and front part of the lens, on account of the lens becoming thinner; the motions of the iris are free, there being no adhesions; the vision more or less perfect; and, lastly, by its occurring at an advanced period of life.

8. *Fluid or Milky Cataract:*—This kind of cataract

is always more or less fluid and of unequal density throughout. It is called milky, from its white colour.

If you examine the eye of a patient with attention, you will see that it has a flocculent appearance, from specks or streaks consisting of solid particles of the lens, and these will move up or down in the various positions and motions of the head, and be removed out of sight; but on the head becoming steady, they again appear. Besides these symptoms, the lens becomes enlarged and globular, and the increase of size is such, that the lens reaches to the iris, so that there is no posterior chamber at all. The size and shape of the pupil is altered; the rays of light do not pass into the eye; and the patient can scarcely tell the difference between light and darkness.

9. *Soft or Caseous Cataract:*—This kind of cataract is of the consistence of firm jelly or cheese. It is uniformly opaque, and there is a milky whiteness, as in the fluid cataract; but the spots and streaks sometimes observable in this form never shift their position, as in the other; the lens also becomes increased in size.

In this cataract, the posterior chamber of the eye is obliterated; there is no interspace between the fore part of the lens and iris; the motions of the iris are performed with difficulty, from the size of the lens, and the rays of light are prevented from entering. The patient sometimes cannot distinguish between light and darkness, although they are seldom so blind as this.

10. *Membranous or Capsular Cataract:*—This form of cataract is not connected with the lens, but the capsule itself. It usually comes on after an operation or in consequence of it.

The membranous cataract is also found in children, when it is called *congenital cataract.* It does not differ essentially from the other forms of capsular cataract; but is called congenital on account of its occurring at a particular period of life, or children being born with it.

11. In membranous cataract the opacity or affection may exist either in the posterior or anterior layer of the capsule, or combined with that of the lens, and thus produce cataract.

In the last case, there is no distinct mark of diagnosis; but when the capsule only is affected, you may offer an opinion. If the anterior layer of the capsule is opaque, it has the appearance of being superficial and close to the pupil, and appears rather nebulous. It does not quite lose its transparency, but becomes semi-transparent. When the posterior layer is affected, this appearance is deeper; being at a considerable depth, and having more or less of a concave form. There are also striæ passing in a radiated direction.

Another species of membranous cataract is, when the capsule becomes opaque, and the lens at the same time absorbed, and a tough, dense, membranous substance is formed, as in congenital cataract.

12. *Congenital Cataract:*—Children are not unfrequently either born with cataract, or with a disposition to cataract, which speedily makes its appearance. The nature of the cataract may be firm, soft, or fluid; and it may be lenticular as in the adult. It seems to be hereditary.

The appearance of congenital cataract is somewhat different from cataract in the adult; there is an opaque nucleus either at the centre or some part of the circumference, and the rest has an unequal opacity, or streaked reticular appearance. And there is also a remarkable unsteadiness of the globe of the eye.

13. We have now gone through the variety of cataracts, and offered the marks of diagnosis, from which you will see the difficulty of distinguishing one from the other.

But it is necessary, as far as possible, to be acquainted with the appearance each form of cataract presents, as the treatment or operation required must be adapted according to the kind of cataract.

14. *Causes of Cataract:*—By far the greater number of cases of cataract are produced, as it is called, spontaneously, or under circumstances which are too subtle for our cognizance. Sometimes, however, the cause can be fairly discovered.

Cataract sometimes arises from obvious causes, as injury, violence, inflammation, or sharp-pointed bodies wounding the capsule of the lens, or the lens itself; and consequently producing opacity of these parts. The opacity arising from this cause often becomes absorbed, and the case undergoes the natural process of cure without requiring an operation. It also runs through families, and appears to be hereditary; and it is likewise said to arise from other causes.

15. *Treatment:*—There are certain symptoms accompanying cataract, by which you are enabled to form a pretty accurate opinion as to the issue of an operation.

Various plans of treatment have been adopted for the removal of cataract, but without success; an operation is only to be depended on.

16. There are four particular circumstances which should lead you to determine as to the success of the operation.

First:—Whether the loss of vision has been gradually

supervening, and has always been in proportion to the opacity of the lens.

Second :—Whether the cataract has been accompanied by chronic ophthalmia, or any changes have been produced in the eye by it; if the cataract has been attended by a penetrating pain in any part of the eye, or orbit, or back of the head, which it will be necessary to inquire about.

Third:—Whether the motions of the iris are duly performed, in the different variations of the light; if not, fear may be entertained of the eye being amaurotic.

Fourth :—If there is the power of distinguishing between light and dark, or the colour or forms of things, or the shade of passing objects.

These circumstances should be particularly inquired into; and if you find the patient has all, or the greater part of them; that is, if the defect of sight has been increasing just in proportion to the increase of the opacity of the lens; the patient has had no pain in the head; the motions of the iris are free, and light can be distinguished; then you may operate, and with the chance of success, as there are no evident reasons against it; for by the *first* circumstance you see that the vision has been impaired in consequence of the opacity of the lens; by the *second*, that there has been no disorganizing inflammation in the eye, or that the brain and origin of the optic nerves have not been affected; by the *third*, that the retina is sound; and by the *fourth*, if the opacity of the lens be removed, that the retina will be in a state to receive the impression of external objects.

17. When there is cataract, the operation must be regulated by taking all the circumstances into consideration.

By the figure of the cataract; whether there are any adhesions of the iris to the capsule of the crystalline lens; and especially by the patient being able to distinguish objects, and light from darkness. On the whole, the latter is a very favorable symptom, and when present, the operation may be performed. If the case is doubtful, it is better to operate; but previously represent the circumstances to your patient.

18. Another question with regard to the treatment of cataract, is whether the operation should be performed, if one eye only is affected.

Some recommend the operation when only one eye is affected; but for my part, the best plan is not to operate, except both are affected; for if you do it when there is only one eye diseased, the focus will be made different by the operation, and the patient will not be able to use both eyes at the same time.

OPERATIONS FOR CATARACT.

19. The operations for cataract are three in number; first, depression or couching, by which the cataract is removed from the axis of vision; second, extraction, which consists in making an incision through the cornea; and lastly, the operation for the solution of the cataract.

20. *Depression or Couching*:—This mode of operating consists in removing the opaque lens out of the axis of vision by depressing it into the vitreous humour.

This is done by a needle, of which there are three different kinds now employed, Hey's, Scarpa's, and Beer's, which last is spear-pointed and narrow at the neck. The needle is the only instrument required; some use a speculum, but, excepting in children, this will not be of much use. I give the preference myself to Beer's needle; a surgeon is not so likely to wound the ciliary ligaments or processes with it.

21. Previous to the operation, you should ascertain whether the patient is in good health, the bowels regular, and that all the functions are properly performed. And when you are about operating, the light, and the position of the patient and operator, are extremely important, and ought to be attended to.

The light should be clear, distinct, and full, but not vivid, and it should not fall on the centre of the eye of the patient, but laterally, else it would produce a dazzling and unsteadiness of the organ. The patient should be placed on a low seat with a high back, and the head resting against it or the body of an assistant. The operator should be on a high stool, or at least of sufficient height to enable him to put one foot on it, and rest his elbow on the knee opposite to the eye to be couched.

22. Having gone through the preparatory steps to the operation, we will now consider the mode of operating itself.

The operator holds the instrument between the thumb and fore finger; the assistant, passing his fore finger round the head of the patient, raises the upper lid by a fold of skin, and presses it gently against the superciliary ridge; the patient is now desired to look inwards, towards the nose, and the operator, resting his little finger on the upper part of the chin of the patient, penetrates the sclerotic

coat about a line and a half from the juncture of the transparent with the opaque cornea, and a line below the transverse diameter of the eye. In the first place, the needle is introduced here, just where the retina terminates, and the ciliary ligament commences, so that these shall be avoided; and secondly, for the purpose of not wounding the ciliary artery, as it goes along the middle of the external convexity of the eye-ball, between the sclerotic and choroid coat. In using Beer's needle, it is introduced with the edge laterally, and its surface upwards and downwards, and directed towards the middle of the globe of the eye. It must be moved slightly between the fingers, (a piece of ivory or brass at the handle, shewing the disposition of the cutting edge,) and then the point carried inwards parallel to the iris, and so as to cover the posterior chamber; the instrument will now be visible through the pupil. When this is the case, the operator must raise the needle upwards, and then depress it downwards and backwards, and a little outwards; by which means, the crystalline lens becomes pushed into the vitreous humour. If the lens should rise from its situation, it must be again depressed; and when it is safely lodged in the vitreous humour, the needle must be withdrawn.

The after-treatment is very simple, and consists in a simple fold of linen moistened in cold water, being applied to the eye. The patient is also to be put in a dark apartment, and narrowly watched, in order to see if any inflammation supervenes: very frequently, none arises.

23. *Extraction of Cataract*:—This operation is the entire removal of the crystalline lens; and there are several instruments required in its performance.

First, you will require the *cornea knife;* Beer's is the one I recommend, the upper edge of which is quite straight, while the lower edge is made straight and oblique; the whole of the lower edge is cutting; the upper edge is cutting towards the point, and the size is accurately increased from the point towards the handle, so as to fill up the opening, and prevent the escape of the aqueous humour. The next instrument is a pair of *curved scissors*, in order to enlarge the opening made into the cornea, if it should not be of sufficient size to extract the cataract. A minute *curved needle* will be required, in order to scratch the capsule of the crystalline lens; a *curette* or *scoop*, to remove any opaque fragments of the lens; and a pair of minute *forceps*, of which the best construction is that recommended by Beer, to extract any portions of opaque membrane from the capsule of the lens. These are the principal instruments required.

24. There seems no necessity for preparing a patient for this operation, beyond taking care that his bowels be duly evacuated, and that he is not labouring under any other complaint or morbid affection, or has not any unusually stimulating diet previous to the operation.

Let us now consider the operation. The position of the patient should be nearly the same as that in the operation for couching; he should be placed opposite a window, so as to admit a full, clear, but not too vivid light. It should not be a reflecting light, so that if the sun should happen to shine, a north window should be chosen; the inner side of the eye towards the nose, where the point of the knife is to be carried through, should be well brightened. The patient should be seated in a low chair as in couching. The operator should place himself behind the patient in a chair of sufficient height to enable him to plant his foot conveniently on a stool, and resting his elbow on the knee opposite to the eye to be operated upon, bring his hand towards him. The assistant should then place his hand behind the patient's head, and with the extremity of the fore-finger gently raise up the lid without making pressure on the globe. The operator then takes the knife in his right hand, if it be the left eye which is to be operated upon, and in his left, if it be the right eye, in the same way as he would take a pencil between his fore-finger and thumb, resting his little finger upon the malar bone.

The first thing which the operator then does, is to make what is called the punctuation of the cornea. He introduces the point of the instrument at a distance of half a line from the anterior junction of the cornea with the sclerotic coat, and passes it in a direction nearly parallel to the iris, and before it with a little obliquity through the anterior chamber to the opposite or nasal side. In making the section of the cornea, the knife should be carried onwards, without any downward motion; and as soon as the section is completed, the lid should be allowed to drop over the fore part of the eye to prevent the escape of a portion of vitreous humour, if there should be any spasm of the part, or any unsteady motion of the patient. The operator waits till the eye is quiet, and then introduces the curved needle with a convexity under the flap of the cornea; and turning the point towards the fore part of the capsule, moves it upwards and downwards and laterally from side to side, making a sort of crucial incision. He then squeezes out the cataract, by making gentle pressure on the globe above and below, until the lens is lifted from its bed, and passes through the opening of the cornea upon the cheek of the patient. All that then remains to do is to examine whether there are any opaque fragments of the lens left; if there are, they must be scooped out by the *curette*; if not, the upper lid is to be rubbed over the surface of the cornea. If there is any portion of opaque membrane remaining, it must be removed by the forceps, and in this way the operation will be completed.

25. Many untoward circumstances frequently interfere with the success of this operation, which, for the sake of clearness we will speak of in regular order.

When any unfortunate circumstance happens, you should be perfectly calm, cool, and deliberate; close the eye-lid; consider what is best to be done; and having made up your mind on that point, proceed with firmness and decision in the operation.

26. First:—In the first place, the section of the cornea may be too small; in which case you will either be un-

able to dislodge the cataract, or so much force will be required for that purpose as is likely to produce serious inflammation, and such a degree of disorganization as will destroy vision.

The section through the cornea should be about nine-sixteenths of a line, or one-sixteenth more than half a line from its junction with the sclerotica; the point of the instrument is introduced a little below the transverse diameter of the eye, on one side, and should come out a little above it on the other. If you find, when you have completed the section of the cornea, that the opening is not large, do not hesitate to use the scissors, in order to make it large enough to admit the passage of the cataract.

27. Second:—The second untoward circumstance to which I shall advert is, the premature escape of the aqueous humour, either from the unsteadiness of the operator, or from some defect in the knife.

On the escape of the aqueous humour, the iris loses its support and becomes prolapsed. When this happens, the way of preventing any mischief will be, not to continue the incision, but to rub the cornea with the point of your finger, by which the prolapsed iris will be stimulated to contract; and on this being removed out of the way, you may complete the incision.

28. Third:—The third unfortunate circumstance which sometimes occurs, is the loss of a portion of the vitreous humour, arising from some undue pressure on the globe of the eye by the operator or assistant, or from some spasm of the muscle of the eye. It may also occur from other causes.

Another way in which this accident sometimes occurs, is when the needle is injudiciously used too near the circumference of the lens and the capsule of the vitreous humour is torn through; so that when you make pressure on the globe, instead of the cataract coming forward, a large portion of vitreous humour is protruded. In this case, you should not attempt to force out the cataract, but you endeavour to entangle it as much as possible, so as to prevent the escape of the vitreous humour. The escape of vitreous humour is also sometimes the consequence of the curette being passed through the back layer of the capsule. The curette should never be used when the pupil is at all obscured; the field of the pupil should be perfectly distinct, when you resort to that instrument. The loss of a small portion of vitreous humour does not essentially interfere with the success of the operation, neither should it prevent you from completing the operation in the best way possible, by removing all the loose fragments of the opaque lens, and the different portions of opaque membrane or capsule.

29. Fourth:—Another unfortunate circumstance which may interfere with the success of the operation, is the introduction of the cornea knife between the lamellæ of the cornea; the consequence of which will be, that the section of the cornea will be very small and imperfect.

These four are the principal circumstances untowardly to your success; but there are many others of less importance.

30. *After-treatment:*—With respect to the after-treatment of the operation of extraction of cataract, your object must be, as far as possible, to prevent inflammation.

A compress of fine linen or cambric, kept wet with cold water, should be applied to the eyes, or rather to the eye opposite that which has been operated upon. The patient should be carried to bed, placed in the recumbent posture, with his head a little elevated, and the room should be darkened. He should be allowed nothing but barley water, tea, or water-gruel, for the first few days; and if there should be any symptoms of inflammation, such as pain, a sensation as if there were some extraneous body in the eye, accompanied with quickness of pulse, a quantity of blood should be immediately taken from the arm. It will be better not to disturb the bandage, or raise the lid to examine the eye, for at least three days, unless the patient should feel any considerable pain or irritation; for in that case, it would be advisable to ascertain the cause, by examining the eye. The patient should be kept in bed in the recumbent posture, for five days, and not even be suffered to rise for the evacuation of the fæces; a bed-pan should be used for that purpose; at the end of that time, he may get up to have his bed made. The best way of preventing irritation, is carefully to avoid making any undue pressure on the globe of the eye. Great care must be taken in adjusting the bandage, not to depress the lower lid, by which means, the section of the cornea may be brought over, and the adaptation of the cut edges prevented.

31. *Solution of the Cataract:*—The third operation is that for procuring solution of the cataract, which is particularly adapted to the cataracts of children, or congenital cataract.

It was formerly deemed advisable to defer the operation for cataract in children, but we are now able to perform one with a hope of success, between the age of eighteen months and four years. But the operation under consideration, is not confined to congenital; it may be employed also in the cataracts of adults, provided they are fluid, soft, or membranous cataracts.

32. This operation is very simple; it consists merely in making an opening in the anterior layer of the capsule of the lens, breaking up more or less the texture of the

cataract, and admitting the aqueous humour in which the cataract is dissolved, and by this means absorbed.

The instrument required is a needle very similar to that employed in the operation for couching; the point, however, is somewhat different; its shoulders are more cutting. It will be right before operating, to use belladonna, for the purpose of dilating the pupil, so that the cataract may be distinctly seen. A small quantity of the extract of belladonna, softened to the consistence of cream, may be introduced into the eye, or smeared round the lids.

33. Having prepared your patient in this way for the operation, it will be adviseable while operating, not to attempt to do too much at once; but rather to repeat it frequently, than to break up the texture too extensively at once.

In operating on the adult, the patient should be placed in the same position as for couching; children are better placed in the recumbent posture, with the head fixed on a pillow. Sometimes a speculum is required to steady the eye; Pellier's speculum is the best for this purpose. The needle may be introduced either in the same way as in the operation for couching, or else through the cornea. In the latter case, there are two modes of operating, called the anterior and posterior; in the former, the needle is introduced at the distance of half a line from the junction of the cornea with the sclerotica, carried parallel to the iris, and turned inwards so as to break up a portion of the capsule of the lens. In the posterior operation, the needle is carried through the posterior chamber, a little behind the iris, and the texture of the capsule is broken up in the same way, so as to admit of the aqueous humour. If the cataract is fluid, it immediately mixes with the aqueous humour, and you will have no more trouble.

34. As to the after-treatment of this operation, your object must be, as in former cases, to prevent inflammation.

35. Having described these different operations, it may be necessary to consider which of them it may be most expedient to adopt.

36. It seems to me that in those cases which admit of the operation for *solution;* namely fluid, soft, and most cases of membranous cataract; that operation is greatly preferable to any other.

Soft, fluid, and membranous cataracts cannot be depressed; it is true that the operation for extraction might be performed, but it is to be considered that the operation for solution is much more easy, and that it does very little injury to the part.

37. In firm cataracts, where it is a matter of indifference whether the operation for depression or extraction should be performed, that for *extraction*, supposing it to be equally well performed, is undoubtedly preferable, because the disease is entirely removed by it.

It is not always, however, a matter of indifference, for there are many cases in which it would be extremely imprudent to attempt the operation for *extraction*, as, for instance, in cases of adhesion of the iris to the cornea, or where the cornea is very flat, and the anterior chamber necessarily small, or in cases of contraction of the pupil, myosis, or arcus sellis.

38. Where there are no contra indications to deter us from performing the operation for *extraction*, it is undoubtedly the most effectual, provided the surgeon has had sufficient opportunities of acquiring dexterity; but if he has not been much in the habit of performing the operation, I should recommend as the safer, though less effectual course, the operation for depression.

OPERATION FOR ARTIFICIAL PUPIL.

39. Where, from some defect of the cornea or iris, or the parts connected with them, there is no passage for the rays of light, the operation for artificial pupil is required. This consists in making a section with a cutting needle, through the iris, which, by the elasticity of its fibres, separates its edges, and thus makes a passage for the rays of light.

There are three modes of performing this operation. *First*:—By a simple incision of the iris, technically called *corotomia*; but this operation was seldom resorted to. *Secondly*:—Where a portion of the iris was cut away, which operation was called *corectomia*; and *thirdly*:—Where the iris was turned away from its attachment to the ciliary ligament, technically called *coredialysis*.

FUNGUS HÆMATODES OF THE EYE.

40. This malignant fungus is a disease which soon proves fatal, unless an operation be early performed: even

the chance of success is extremely doubtful. No age appears exempt from it; but it more frequently attacks the young; and a large portion of the cases occur before twelve years of age.

On looking into the eye at the commencement of this complaint, you see opposite to the pupil, and deeply seated, an appearance like a mirror, resembling an opacity of the lens, from which it is difficult to distinguish it. If you watch the progress of the disease, you will see that this appearance enlarges into a prominence, proceeding from the bottom of the eye towards the cornea, and as it reaches the lens, you must be the more on your guard, that you do not mistake it for cataract. There is one appearance, however, at this stage, by which you may distinguish the one from the other; upon the opaque substance, or the retina, of which its covering consists, branches of the arteria centralis retinæ may be seen ramifying. The other symptoms are loss of vision, and the iris remaining immovable. As the prominence enlarges, the iris becomes protruded, and the cornea distended. The conjunctiva becomes inflamed, the eye-lids vascular, and in a diseased state; and in process of time, the cornea sloughs, an opening is formed, and a discharge of a ropy mucus first takes place.

The fungus does not always protrude through the cornea, but sometimes through the sclerotic, and then it has a purple livid hue, and is covered by the conjunctiva. As it increases in size, it assumes a dark red colour, its surface is unequal and irregular; it bleeds at the slightest touch; the parts slough, and then there is a fetid sanious discharge.

41. During the progress of fungus hæmatodes of the eye, the health becomes affected, the countenance puts on a sallow hue, and the patient wastes in flesh.

The disease is accompanied, and generally preceded, by disorder of the digestive organs; the appetite is impaired, and there are present all the other marks of derangement of the general health. When the strength and health are broken up, the disease very soon comes to a termination. The close of the disease is preceded by hectic fever; as is that of most complaints from which the general health has suffered much during their progress. In fungus of the eye, the rest is completely destroyed, there is an affection of the nervous system; and in children, convulsions come on, which terminate their existence.

42. *Treatment:*—The only remedy in this disease, is the extirpation of the eye, and this in the early stage, before there is a disposition in the constitution to reproduce the disease.

CANCER OF THE EYE.

43. By cancer of the eye is meant, not cancer of the globe of the eye, for it rarely or ever commences in it; but it begins in the appendages and conjunctiva, and then extends to the globe of the eye.

Cancer of the eye at the onset, resembles a warty tumour, with an ulcer on its surface, which has exactly the same appearance as ulcers in other parts of the body; it then extends not only to the globe of the eye, but the palpebral lining, the lachrymal gland, the periosteum of the bones, forming the orbit, and the antrum; in fact, the globe and its appendages become one mass of disease.

44. *Treatment:*—No good can be expected in the treatment of this complaint, unless the cancer be early removed by the knife. In the progress of the disease, the general health becomes broken up.

EXTIRPATION OF THE EYE.

45. Although this operation appears formidable, and is so to the patient, as it is a most painful one, yet it is not difficult of execution.

The best mode of performing it is as follows:—The patient is to be placed in the sitting posture, or at any rate, with the head elevated, and in order to steady the eye, or shift its position, if necessary, you are to pass a needle, armed with a ligature, through the fore part of the globe of the eye, by which means you can readily steady it, or move it from one side to the other. If the lids are contracted, or the eye ball is exceedingly large, it will be necessary to divide the outer angle in order to facilitate the operation. An assistant raises the upper lid, and the operator then introduces a double-edged straight knife through the conjunctiva, and divides the cellular membrane as extensively as he can. He next cuts through the oblique muscles; and having done this, he then divides the recti muscles and the optic nerve; to complete this last step of the operation, a curved knife adapted for the purpose, is used, and the globe of the eye is thus easily extracted. It seldom happens that any hemorrhage takes place which may not be stopped by dossils of lint. The lids are to be brought in apposition, a compress of lint is to be applied over the eye; inflammation should be guarded against, and the patient should not be neglected; for although inflammation does not frequently supervene after the operation, yet it sometimes comes on, extends to the membranes of the brain, and proves fatal.

SECTION IV.

DISEASES OF THE APPENDAGES OF THE EYE.

HORDEOLUM OR STYE.

1. One of the most common affections of the eye-lids, is that known by the name of stye or hordeolum, from its resemblance to a barley-corn. It consists of a small abscess in the lid, and is produced by an obstruction in the follicles of Meibomius; the secretion from the part is altered, becomes inspissated, lodges in the lid, excites irritation, inflammation, and the process of suppuration; lastly, the small abscess breaks, and matter is discharged.

In most instances, the suppuration is confined to a small space, but in others, it puts on the character of a boil, and sloughing of the cellular membrane then takes place.

2. It most frequently happens that hordeolum depends upon something wrong in the system, or derangement of the digestive organs, or impaired functions in some part of the body; and then these states must be attended to, for they produce irritation, and sometimes ulceration of the edges of the eye-lids.

3. It is necessary when styes are attended with inflammation and redness, that cold applications, poultices, and fomentations be applied, as in other inflammations; and when matter is formed, that the abscess should be opened with a lancet.

The best local applications that can be used, are those of a mild stimulating nature, the mercurial ointments, with a little of which the edges of the lid should be besmeared every night at bed-time, the parts being previously washed with tepid water. The unguentum hydrargyri nitratis is the one in common use; but it is in its usual state too stimulating for the eyes, therefore it must be diluted with some simple ointment. Both the red and white precipitate mercurial ointments are used, and the zinc ointment also; in fact, it is not essential what kind is employed if it be mildly stimulating.

TRICHIASIS.

4. Trichiasis is that state of the eye-lashes, in which they become altered in growth, and turned inwards on the globe of the eye, irritating the conjunctiva on every motion of the eye.

Some consider this complaint not owing to the effect of the altered growth of the cilia only, but to a turning in of the lid, called *entropium*. The only means, however, that can be relied on for treatment, is to pluck away the eye-lashes, by means of forceps rather broad at the points; some benefit may be derived from applying a piece of adhesive plaster to the lid, which is to be fastened to the cheek, so that the eye-lashes may be kept bent outwards.

ENTROPIUM.

5. Entropium, or *inversion* of the eye-lids, is produced from ulceration of the tarsi, the cicatrices formed by the healing of lippitudinous ulcers which alter the shape of the lids, so that the eye-lashes are turned inwards, irritate the conjunctiva, and produce a continual state of irritation of the whole organ.

There is a watering of the eye, together with chronic ophthalmia, and in a short time vessels may be seen shooting over the cornea; nebula and ulceration of the cornea supervene, and thus a serious state of irritation of the transparent part of the eye is produced.

6. In the treatment of entropium, nothing will be of any use except cutting away a piece of skin from the affected lid; for when this is done, the edges of the wound are brought together by strips of adhesive plaster; a cicatrix is formed, and the eye-lids are then drawn upwards.

The mode of performing the operation is very simple; you must lift a portion of the skin of the affected lid with a pair of forceps that have towards the point, transverse branches, and which are grooved; with this you lay firm hold of the portion of the lid, and all you have to do is, to take a pair of curved scissors, and cut off the projecting portion, as near to the edge of the lid as you can.

ECTROPIUM.

7. Ectropium, or *eversion* of the lids, happens from ulceration on their edges, an altered and vitiated secretion from the follicles of Meibomius, which produce a redness and an altered state of the conjunctiva, and from cicatrices and contractions of the skin of the lids, which tend to evert them.

This complaint is very distressing to the patient; the eye has not its natural covering; irritation, from extraneous bodies getting into it, is produced, and thus a constant state of chronic ophthalmia is kept up.

8. The plan usually adopted for the relief of this complaint, consists in removing a triangular portion of the lid, just in the same way as the operation for cancer of the lip is performed.

This is done by cutting through a piece of the lid which is raised by a pair of forceps, so that the base shall be towards the edge of the lid, and the apex below, at the union of the two sides. A suture is applied through the incision, the edges of the wound are brought together; these united, tend to keep the lid in the natural position; and in fact, the operation, in this way, is often successful.

Where the disease is brought on by a thickened state of the conjunctiva lining the lid, you must remove that portion; if from a cicatrix, it must be divided; but it will be proper to state that this seldom answers, the divided cicatrix re-contracts, and the disease returns.

FISTULA LACHRYMALIS.

9. By this term is understood all obstructions of the lachrymal passage, preventing the natural flow of the tears and mucus from the eyes to the nose.

10. The most common cause of this complaint, is a closure of one of the puncta, and then there is *epiphora*, or a watering of the eye, together with suffusion of the

tears, and the surgeon consequently discovers that one of the puncta is closed.

This puncta must be punctured by a small sharp pin, made of gold or silver, which is to be pushed through it to the lachrymal sac; the obstruction is removed, and the epiphora relieved.

11. When the epiphora continues, the eye becomes irritable, a drooping of the lids comes on, and an altered state of the lachrymal sac is produced, so that the original seat of the complaint is in the ductus ad nasum.

The original seat, then, is in the duct leading from the lachrymal sac to the nose, and the tears, instead of finding their way to the nose, flow down the cheek.

12. Fistula lachrymalis may be divided into three stages; first, where there is only simple distention of the lachrymal sac; secondly, where there is inflammation and suppuration of the sac; and lastly, where there is a fistulous opening leading from the sac to the cheek.

13. *First Stage:*—The first symptom in simple distention of the lachrymal sac, which leads the patient to observe any thing amiss with the eye, is, that on reading or exposing it to the wind, there is a watering of the eye.

In a short time, this symptom becomes constant, and then a swelling appears at the inner corner of the eye, arising from distention of the lachrymal sac, the tears collecting in it. These produce irritation; mucus and purulent matter is secreted; but when the sac protrudes, pressure made on it pushes the tears or mucus either through the puncta, over the face, or down the nose.

14. The complaint sometimes remains in this stage for many years, with only little inconvenience, pressure being occasionally made on the sac to empty it.

Finally, however, from the pressure of the distended sac, and obstruction of the nasal duct continuing, or some accidental cause, irritation is excited, and the second stage produced.

15. *Second Stage:*—Inflammation and suppuration of the lachrymal sac, is attended by a puffiness of the inner corner of the eye, redness of the surrounding skin, which becomes swollen and hard, from the effusion of lymph.

Suppuration having commenced in the sac, ulceration comes on, and the matter effects an external opening, by which it is discharged.

Now obstruction, inflammation, and suppuration, do not always take place in the course of the *ductus ad nasum*, from ordinary causes; but the progress of the complaint, when arising from ordinary and from specific causes, will be very different.

16. *Third Stage:*—An opening being thus made from the influence of the second stage, it is rendered permatent or kept open by the flow of pus and tears out of the wound, over the cheek; and thus a fistulous opening is formed from the sac to the cheek.

In this stage of the complaint, the patient is distressed a good deal by frequent returns of inflammation and suppuration of the sac.

17. *Treatment:*—Although various means have been attempted in the cure of this complaint, no plan has yet been laid down that has proved successful; or at least, the benefit to be derived from the means and treatment recommended is, in most cases, very slight.

18. *First:*—In many cases little need be done but to evacuate the sac for the purpose of preventing irritation, in those cases where there is simple distention of the sac.

One of the causes of this complaint is a vitiated state of the follicles of Meibomius; when matter is secreted, and the eye-lids are closed together, and irritation is thus produced in the lachrymal sac; in these cases the lids should be washed with tepid water, and besmeared every night at bed-time, with a little of the unguentum hydrargyri nitratis. By this means, and attending to the constitution, and removing irritation as it arises, the patient may remain in that state for years.

19. *Second:*—When the obstruction is completed, the distention considerable, the attacks of inflammation frequent, and suppuration has commenced, another kind of treatment must be adopted. Your object will be to effect a natural passage for the flow of the tears, that is, through the nasal duct, instead of their flowing over the face.

Methods have been proposed by Anel, Mr. Travers, and Mr. Wathen; but the plan laid down by Mr. Ware is the one now generally adopted; it consists in introducing a nail-headed style into the ductus ad nasum, and letting it remain there.

The style should be just large enough to allow of the flow of the tears, by the side of it. If no opening has been made from the repeated inflammation, the mode you will adopt to make one is as follows: you direct the patient to be seated, and then standing behind him, you pass your hand round the patient's head, open the lachrymal sac, and then carry a blunt-pointed bistoury *inwards* and *downwards*, and divide the obstruction: the instrument with which you make the external opening is a phymosis knife. Having done this, you ascertain whether the passage is free, and then introduce a nail-headed style, about an inch and three eighths long; the head of the style is to lay obliquely on the front of the cheek, and a piece of adhesive plaster spread on black silk to be put over it, which will prevent persons from suspecting that there is any thing wrong in the eye.

The style requires to be removed once a day for the first week, and to be washed; sometimes there is a little irritation produced by its introduction, but in general there is none, and the comfort the patient experiences is very great; the water ceases to flow over the cheek, the sight becomes stronger, the tendency to inflammation is obviated; and, indeed, so much comfort is experienced that the patient is loth to dispense with the use of the style. The obstruction frequently returns when the style is removed.

20. It sometimes happens that from disease about the bones of the nose, a fistulous opening from the sac to the nose is formed.

If you should operate in such a case, you must introduce a sharp-pointed instrument, either a probe or trochar, through the fore part of the lachrymal bone into the nose, and the only object which remains is to keep open the perforation by a sponge tent, or nail-headed style; but it becomes rarely necessary to perform this operation.

END OF PART II.

INDEX.

PAGE

- Abscesses 18
- Absorption 16
- Acromion, Fractures of 242
- Albugo or Leucoma 295
- Amaurosis 312
- Amputations 137
- Ancle, Dislocations of 261
  - Fractures of 279
- Aneurisms 56
  - Operations for 61
- Anthrax 41
- Aorta, securing of 62
- Areola Tumour 117
- Arteries, tying of 61
- Artificial Pupil 325
- Ascites 121
- Bistourie cachée 99
- Bladder, Calculi in 96
  - Irritable 181
  - Mucous Disease 182
  - Paralysis of 183
- Bones, Exfoliation of 283
  - Suppuration in 281
  - Syphilis of 210
- Brain, Fungus of 50
  - Inflammation of 51
  - Wounds of 49
- Breast, Diseases of 106
  - Adipose Tumour of 116
  - Cancer of 108
  - Carcinoma of 108
  - Encysted swelling of 107
  - Hydatid 107
  - Irritable Tumour of 116
  - Scirrhous Tumour of 108
  - Simple Chronic Tumour 108
- Bubo, Phagedenic 205
  - Sloughing 203
  - Sympathetic 187
  - Syphilitic 201
- Burns 285

PAGE

- Calculi, Urinary 96
- Caligo 313
- Cancer or Carcinoma 108
- Cancer of the Male Nipple 117
- Carbuncle 41
  - Chronic 32
- Carcinoma or Cancer 108
- Carpus, Dislocations of 247
- Castration 137
- Cataract 316
  - Depression of 320
  - Extraction of 321
  - Solution of 324
- Chancre 192
  - Irritable 198
  - Sloughing 198
  - In Women 200
- Chemosis 293
- Chicken-breast 230
- Chordee 184
  - Chronic 184
- Cicatrization 24
- Clap or Gonorrhœa 165
- Clavicle, Dislocations of 237
- Compression 46
- Concussion 43
- Congenital Hernia 87
- Conjunctiva, Inflam. of 292
  - Fungus of 305
  - Granulations of 305
- Cornea, Inflammation of 308
  - Ulceration of 308
- Coredialysis 326
- Corectomia 326
- Corotomia 326
- Crural Hernia 68
- Direct Inguinal Hernia 86
- Dislocations 231
- Dropsy 121
  - Encysted or Ovarian 123
  - Peritoneal 121

PAGE
Ectropium - - - - - - - 331
Elbow, Dislocations of - - 244
Fractures of - - - - 280
Encanthis - - - - - - - 306
Entropium - - - - - - - 330
Epiphora - - - - - - - 331
Erysipelas - - - - - - - 41
Exfoliation - - - - - - - 283
Exomphalos - - - - - - 90
Exostosis - - - - - - - 284
Eye, Diseases of - - - - - 291
Cancer of - - - - - - 328
Extirpation of - - - 328
Fungus Hæmat. - - - 326
Femoral Hernia - - - - - 88
Femur, Dislocations of - - 254
Fingers, Dislocations of - 248
Fistula in Ano - - - - - - 129
Fistula Lachrymalis - - - 331
Fractures - - - - - - - 264
Fungus Hæmatodes - - - 112
Gangrene - - - - - - - 35
Glaucoma - - - - - - - 315
Gleet - - - - - - - - - 188
Gonorrhœa or Clap - - - 165
Gorget - - - - - - - - 99
Granulation - - - - - - 22
Hæmorrhois - - - - - - 146
Hare-Lip - - - - - - - 155
Head, Injuries of - - - - 42
Hemorrhoidal Excrescences 149
Hernia - - - - - - - - 71
Reducible - - - - - 74
Irreducible - - - - - 75
Strangulated - - - - 76
Hernia, large, operation for 84
Hernia Humoralis - - - 185
Hip, Dislocations of - - - 254
Scrofulous Disease of - 224
Hordeolum or Stye - - - 329
Hornet, Sting of - - - - 161
Humerus, Dislocations of - 238
Fractures of - - - - 279
Fracture of the Neck of 243
Hydrocele - - - - - - - 66
Of the Spermatic Cord 71
Hydrophobia - - - - - - 159
Hydrophthalmia - - - - 315
Hypopium - - - - - - - 312
Inflammation - - - - - 5
Adhesive - - - - - - 12
Inguinal Hernia - - - - 72
Small - - - - - - - 84
Ing. Hern. in the Female - 85

PAGE
Irritation - - - - - - - 2
Iritis - - - - - - - - - 311
Joints, Scrof. Diseases of - 222
Kidneys, Calculi in - - - 92
Hemorrhage from - - 183
Knee Joint, Comp. Disl. of 261
Lachrymal Sac, Distent. of 332
Inflammation of - - - 332
Lacteal Tumour - - - - - 118
Lacunæ, Abscesses in - - 175
Leg, Fractures of - - - - 271
Lip, Cancer of - - - - - 156
Lithotomy - - - - - - - 97
Lithotomy in the Female - 105
Lower Jaw, Dislocations of 252
Lues Venerea - - - - - 191
Lumbar Abscess - - - - 227
Medullary Abscess - - - 282
Medullary Sarcoma - - - 112
Mesenteric Glands, Scrof. – 221
Metacarpal Bones, Disl. of 248
Mollities Ossium - - - - 285
Mortification or Gangrene - 35
Mouth, Syphilis of - - - 206
Nasal Polypi - - - - - - 150
Nebula - - - - - - - - 303
Neck, Glands of, Scrofulous 219
Necrosis - - - - - - - 285
Noli me tangere - - - - 32
Nose, Syphilis of - - - - 207
Oblique Inguinal Hernia - 72
Onyx or Unguis - - - - 308
Ophthalmia, Acute - - - 292
Chronic - - - - - - 293
Epidemic - - - - - - 299
Egyptian - - - - - - 299
Purulent - - - - - - 298
Strumous - - - - - - 301
Ophthalmitis - - - - - 311
Paracentesis Abdominis - 126
Thoracis - - - - - 127
Paraphymosis - - - - - 197
Patella, Dislocations of - 258
Fractures of - - - - 277
Periosteum, Syphilis of - 210
Phymosis - - - - - - - 195
Piles - - - - - - - - - 146
Pituitary Membrane, Enl. 153
Poisons - - - - - - - - 158
Animal - - - - - - 159
Mineral - - - - - - 163
Morbid - - - - - - 164
Vegetable - - - - - 161
Prolapsus Ani - - - - - 148

PAGE
Prostrate, Acute Inf. of - 178
  Calculi in - 104
  Chronic Inf. of - 178
  Enlarged - 178
  Fungoid Polypi of - 181
Psoas Abscess - 227
Psorophthalmy - 302
Pterygium - 307
Pus or Matter - 13
Pustules - 304
Rachitis or Rickets - 229
Rectum, Polypi of - 149
Retention of Urine - 119
Ribs, Dislocations of - 237
Scalds - 285
Scalp Wounds - 54
Scapula, Fracture of - 243
Scrofula - 215
Scrofulous Affections - 218
Skull, Fractures of - 47
Soft Cancer - 112
Sonde-à-dard - 100
Sound - 98
Spine, Dislocations of - 235
  Fractures of - 235
  Injuries of - 54
Spongoid Inflammation - 112
Staff - 98
Staphyloma - 310
Stricture, Inflammatory - 174
  Permanent - 171
  Spasmodic - 173
Stumps, Treatment of - 145
Stye or Hordeolum - 329
Submax. Duct, Calculi in - 107
Suppuration - 13
Syphilis - 191
Syphilitic Affections - 205
  Eruptions - 209
Tapping - 126
Taxis - 77
Testicle, Diseases of - 130
  Chr. Enlarged - 134

PAGE
Testicle, Fungoid Disease of 132
  Hydatids of - 131
  Inflammation of - 185
  Irritable - 135
  Scirrhus of - 131
  Wasting of - 137
Thigh, Dislocations of - 254
  Fractures of - 271
Thumb, Dislocations of - 249
Tibia, Dislocations of - 260
Tic Douleureux - 157
Toes, Dislocations of - 248
Tonsils, Enlarged - 153
Trephining - 52
Trichiasis - 330
Ulcers - 25
  Gangrenous - 28
  Healthy - 25
  Indolent - 27
  Inflamed - 28
  Irritable - 29
  Menstrual - 31
  Phagedenic - 204
Ulceration - 16
  Sinous - 30
  Superficial - 32
Umbilical Hernia - 90
Ureter, Calculi in - 93
Urethra, Calculi in - 103
  Hemorrhage from - 185
  Irritable - 177
  Sloughing - 199
Urine, Extravasated - 177
Venereal Diseases - 164
Ventral Hernia - 92
Vertebral Diseases - 226
Vertebræ, Fractures of - 235
Viper, Bite of - 161
Warts - 201
Wasp, Sting of - 161
Whitlow - 31
Wrist, Dislocations of - 246
  Fractures of - 280

FINIS.

Metcalfe, Printer, 3, Grocers' Hall Court, Poultry.